Supreme Court, U.S.
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In The
Supreme Court of the United States

SOUTH FLORIDA WATER MANAGEMENT DISTRICT,

Petitioner,

v.

MICCOSUKEE TRIBE OF INDIANS, *et al.*,

Respondents.

On Writ Of Certiorari To The United States Court Of Appeals For The Eleventh Circuit

JOINT APPENDIX

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No.: 98-6056 CIV FERGUSON

No.	Date	General Description
72	11/19/98	Deposition of Sharon M. Trost
68	11/23/98	Deposition of Dr. Timothy Bechtel
70	12/2/98	Deposition of Ken Ammon
76	12/8/98	Deposition of Bradley G. Waller
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86	12/16/98	Deposition of Ronald Jones
71	12/22/98	Deposition of Samuel Eugene Poole
77	12/23/98	Deposition of Richard Drew
60	1/4/99	Plaintiff Miccosukee Tribe's Motion and Incorporated Memorandum of Law for Summary Judgment on all Counts of Tribe's Complaint
63	1/4/99	Affidavit of Tommy Strowd, Jr.
65	1/4/99	Defendants' Statement of Undisputed Facts for Case Nos. 98-6056 and 98-6057

74	1/4/99	Affidavit of Sharon M. Trost
82	1/20/99	Plaintiff Miccosukee Tribe's Response in Opposition to Defendants' Motion for Final Summary Judgment and Memorandum in Support and Response to Defendants' Statement of Undisputed Facts
84	1/22/99	South Florida Water Management's Response to Miccosukee Tribe's Motion for Summary Judgment (Memorandum of Law Included)
164	2/4/99	Transcript of Hearing before The Honorable Wilkie D. Ferguson, Jr.

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF FLORIDA

MICCOSUKEE TRIBE OF INDIANS OF FLORIDA,

Plaintiff,

v.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT and SAM POOLE,

Defendants.
_____/

CASE NO.: 98-6056-CIV-FERGUSON

FRIENDS OF THE EVERGLADES,

Plaintiff,

v.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT,

Defendants.
_____/

CASE NO.: 98-6057-CIV-FERGUSON

[The Following Joint Appendix Documents Were All Admitted In This Court.]

Deposition of Sharon M. Trost

November 19, 1998

* * *

[6] A. I'm the director of the Everglades Stormwater Program.

Q. And what are your responsibilities in that position?

A. My responsibility is to coordinate and implement a cross-functional program here at the District to make sure that water quality at structures that the District controls, that pump into, through or from the Everglades Protection Area, the water at [7] these structures will meet water quality standards by the year 2006. We're going to accomplish this through a number of different methods.

* * *

* * *

[10] A. I do not. My first real exposure to S-9 was probably in mid April of this past year. I mean I have always known where S-9 is located and so forth, but in March 20th when I was asked by Sam Poole to take over this program, I sat down and made a list of all the basins and I met with various people to find out what issues were in each basin and I knew that we wanted to do some work in the S-9 basin and I located correspondence to Miss Webster and then I proceeded to direct the preparation of the Section 319 grant and that's basically been my involvement. I believe you were in a meeting with me in mid May. Somebody named Childe was there also.

* * *

[12] A. . . . Are you familiar with the 319 process?

Q. Somewhat, but let's talk about it.

A. As you have more partners in that, you get more points and you have a better chance of being funded and they prefer the granting agency, which is the United States EPA, through the auspices of our DEP in Tallahassee, evaluates all the proposals that are submitted and they pick which ones should be funded. And it's always good – when a local governmental entity is the applicant, they have a better chance of being funded than if it's another state agency. So the Central Broward Water Control District has consultants that work for them, Montgomery Watson, Incorporated and Augustin Maristany is the lead engineer there, so we worked with Augustin Maristany and Pat Webster who at the time was chairman of the board of the Central Broward Water Control District. My staff, including Paul Warner, who is in my department of department staff, outlined the framework for what we hope would be a successful 319 grant proposal * * *

[15] Q. The C-11 West restoration project, is that that it's called?

A. Yes. It's an element of the Re-study. The Corps has developed a list of a number of what they call Critical Restoration Projects and the C-11 West is one of those projects.

* * *

[19] A. The proposal involved three major areas for [20] water quality improvements, to improve quality of water discharging into the C-11 West Canal. First of these was to install spillways at the secondary canal junctures

with C-11 West, the canals that pour into C-11 West; to raise up water levels in the surrounding sub-basins and to increase stormwater retention in the surrounding sub-basins, the thought being that if you can keep more stormwater in the sub-basin, minimize it from going into the canal, then you maintain a better water quality.

* * *

[22] Q. Okay. And what was the second item that you began to mention that would be used as part of the 319 grant?

A. The second item would be to deepen some of these secondary canals, to dredge them, to deepen them a little bit to increase their wet treatment detention capacity. See, there's not a lot of lakes in this area, so you need to figure a way to slow the water down before it enters the main canal.

* * *

[23] A. By routing through those lakes you can maximize the wet detention treatment. And we had smaller – those are the large ticket items as far as what cost the most in the proposal. We had other things in the proposal that included doing sediment traps and seeding of different types of grasses and different types of vegetation on some canal banks that needed more vegetation to slow water down or to trap sediments on it. There's a laundry list of Best Management Practices that are commonly used in urban environments and we were going through the ones that we felt would be viable in this area and put several of those in the proposal.

* * *

[24] Q. Were there any other water control districts or local government units involved in that application?

A. Yes. But I don't have the specific list, but we had approached a number of local government entities and asked them to participate and some of them had agreed to provide funding or in-kind services, but you'll have to get the final proposal to . . .

* * *

[27] Q. So you're not an expert, for instance, in water quality?

A. No, I am not.

* * *

[28] A. I am responsible for administering the Non-ECP permits, developing the regulatory action strategies, formulating water quality improvement strategies and directing any engineering, design or construction necessary to improve water quality in these basins. And the way I will do that is through directing all of these team members I mentioned earlier.

Q. So, what is the Regulatory Action Strategy for the Western C-11 Basin?

A. Well, the Regulatory Action Strategy is the same for all of the basins. It's a ten step process that we go through and then we tailor the water quality improvement strategy for each basin, depending on what we find as you move through this process.

We start out with an inventory of basin structures, and then with some baseline water quality data collection at primary structures, and then the Regulatory Action

Strategy moves this water quality monitoring further out into the basin and out into the sub-basins where you collect adequate water quality information to identify hot spots or areas where the water quality is not meeting the desired water quality standards.

The next framework of the Regulatory Action Strategy you pursue is in the area of the hot spot to identify the specific source of the water quality [29] problem and, once that is identified, you perform various types of analysis to determine what sort of Water Quality Improvement Strategy would be appropriate. Once you've identified the water improvement strategy, you're then kind of out. You know, you are trying to do this – because it's called Regulatory Action Strategy, you're trying to accomplish this through the permit holder by making sure the permit conditions are in force. Permit holder has implemented the best possible Best Management Practices or has performed other functions such as retaining stormwater or changing their practices to improve the water quality.

Where the regional aspect of this program comes into play, once you've achieved everything you can through the permit arena, then you'll have to step to some other level if you are not at the desired water quality standard. That's when you have to do some kind of regional engineering solution or design something or construct something that enables you to get the water cleaned up to the point where you – you know, to your target goal.

Q. Is there a time line for implementing this Regulatory Action Strategy? That's all the steps?

A. Yeah. I don't have the Regulatory Action [30] Strategy document in front of me. There's a time line. It's part of the Non-ECP permit. It's all in the permit. And we

have data being collected in these various basins, we have people – we've been approved for additional staff that we're hiring right now to move forward in all of these basins and I don't have the time line with me right now, but there is a specific time line to ensure that we can meet water quality standards by the year 2006.

* * *

[31] Q. And the S-9 pumps seepage water and canal water; is that correct?

A. I don't feel I'm qualified to answer exactly what it pumps. I'm not the right person for that.

* * *

[32] Q. Now, the – just to verify this, the S-9 does not have an NPDES permit; is that correct?

A. That's correct.

Q. There aren't any pending applications or anything like that?

A. That's correct.

* * *

[37] Q. You mentioned that you worked on the application or I think you put it you got the NPDES for the ASR for the project. What kind of NPDES project permit is that?

A. The problem with the ASR is that it doesn't really fit into the niche of how EPA defines the National Pollution Discharge Elimination System types. It's not really an industrial discharge, but I believe that we ended up in that classification and then as an experimental test well

because they have like various types of permits to fit something like aquifer storage and recovery. Because we're talking surface water, we're pumping it down into the Florida aquifer to determine if there's any water treatment benefits of reduction of nutrients before the water enters Lake Okeechobee. Then we recover the water through natural Artesian pressure and release the water back into the surface water canal and then it moves down into Lake Okeechobee. So that was basically considered a point source by the EPA, so even though we took it from a stream, you know, from runoff, put it into a well, when it came out of the well, we obtained that permit.

[38] Q. Where's that ASR project?

A. On Taylor Creek/Nubbin Slough up in Okeechobee County. It's just north of Lake Okeechobee and a canal bank, a canal that discharges into the lake. It's no longer – it has not been operational for eight or nine years. The well is closed off. It was an experiment we did as part of the LOTAC hearings of the mid to late 80's.

Q. So that was a situation – let me recap it and see if you can tell me if I got it right – where you took water, put it into the ground and then later retrieved the same or other water for use?

A. That water and other water that was there that mixed with it –

Q. Okay.

A. – and we had a mixing zone as part of the permit where we did the sampling for the compliance tests.

Q. And EPA considered that to be a point source: is that correct?

A. Yes.

MS. SOLE-CALAS: I'm going to object again to the form of the question.

Counsel, if you could just clarify.

BY MS. CARROLL:

[39] Q. If I can make my computer work, I can clarify.

EPA required you to have an NPDES permit for an ASR well; is that correct?

A. Yes.

Q. Was that a waste water permit?

A. I don't remember. I haven't looked at those documents for eight or nine years.

Q. Was the water of a higher quality when it came out of the well than it was when it went in?

A. Yes. In terms of nutrients it was, but it was worse in terms of salinity.

* * *

[46] A. Then when you identify the problem, to see whether or not they are in violation of some aspect of the permit. Then we have the ability, through our existing regulatory authority, to get them to implement some kind of Best Management Practice or some other engineering design or structure or something to try to enhance the water quality.

Q. So when you were saying that you might be able to do something sooner, you were talking about existing permit conditions that would have to be enforced?

A. Right. If they are in violation.

* * *

[48] A. I'm aware of three major 298 districts.

Q. Are all those – all three are 298 districts?

A. I know that Central and Southern are. I don't know if Weston is considered a 298 district, but they are their own water management system and throughout that development.

Q. Does the District permit activities of these water control districts? Do you have a regulatory –

A. What do you mean activities of them?

Q. Well, do you issue – I guess what I'm asking is do you issue any kind of permit to the districts themselves, the water control districts?

A. Well, we do issue permits to 298 districts, but I'm not familiar. I am not the person to ask about what permits our Regulation Department has issued in this area.

* * *

[60] Q. When you talked about the Regulatory Action Strategy and steps involved with that, you mentioned a – eventually potentially using some kind of a regional treatment facility. Do you know what step that would be at in the –

A. That would be towards the end of the ten steps. You mean actually building it?

Q. Yeah.

A. That would be at the end of the ten steps. That's when you identify specifically what the water quality improvement strategies need to be and then you start, you know, implementing those. As far as anything built or constructed like a treatment plant or a retention pond, Stormwater Treatment Area, a periphyton STA, anything like that, earlier in those steps you can still get those BMPs implemented. You don't have to wait until the end to do that.

Q. But that's just for BMPs. If you're talking about some other technique, that doesn't happen until the end of the ten steps?

[61] A. Correct. And depending on how quickly you can do the ten steps, what effect, how quickly you've been able to identify and implement that strategy.

Q. How long are the ten steps projected to take for the C-11 West Basin?

A. The chart on the last page of the Regulatory Action Strategy is a generic chart for all the basins in the Non-ECP permit, including the C-11 West. If we are able to capture all the water quality information we need FY02, then we'd be implementing solutions as soon as we have that information, depending on each basin. Some basins there's a lot more data available than others, and areas where we have a lot of data we'll be able to put solutions into place sooner than in other basins where we don't have as much information. And you can have mountains full of information on a basin but you have to have the right kind of information so that you can track these hot spots up

into their sources and know where the problem is that you're solving.

Q. Well, that's for purposes of BMPs, right?

A. That's for purposes of anything that we're going to do. I mean why should – I mean why should we implement a massive project in any place in South Florida if we can save money on that project by [62] forcing someone who is causing a problem to clean up more of their act first, let them implement a BMP and bring it down cleaner so that the resulting water quality is less – there's less of a massive project involved? That's the whole purpose of the Non-ECP permit was to go through and look at this Regulatory Action Strategy and get the water as clean as possible before we implement these regional, expensive, time consuming and complicated projects.

Q. But that means you have to wait until you identify the hot spots, right?

A. That's right.

Q. And that also means that you may not have water of a quality sufficient to meet the needs of the environment even when you have identified the hot spots?

A. The entire intent of the program, though, is to meet the water quality standards by the year 2006 as laid out in the Everglades Forever Act and that's what we intend to do.

Q. But BMPs may not do everything?

A. That's right. And that's when I would have to turn to another technology like a periphyton Stormwater Treatment Area, if that proves to work out, or a retention

basin or Stormwater Treatment Area or [63] water treatment plant.

Q. Now, you directed me to the last page of the Regulatory Action Strategy for a schedule for what's going to happen for the C-11 Basin as it is one of the basins covered by this strategy, right?

A. (Nods).

Q. But this schedule doesn't show anything involving any construction; is that right?

A. That's correct. Any construction would be occurring between FY02 and on in the generic schedule, if you look at the dotted line there, but I've also told you that we are ahead of schedule in this basin in the earlier steps, so it is my fervent hope that whatever solutions we would implement would be earlier than what is shown on this chart.

Q. Well, this doesn't show any – it doesn't show any construction.

A. No, it doesn't.

* * *

[66] Q. How is water getting into the C-11 Canal?

A. Some of it gets there from smaller canals, [67] secondary canals that pour into it. Some water gets there from overland runoff and some water gets there from ground water flow that enters the canal – the smaller canals and then moves down the smaller canals into the main canal. And I have no idea what the percentages of those waters are.

* * *

[71] A. This map is the Western C-11 Basin.

Q. That's just one basin, right?

A. Yes.

Q. Are there sub-basins inside that?

A. Um. Yes.

Q. Okay.

A. But I don't really see them delineated here. We have identified sites to collect water quality samples that would best reflect sub-basins on the water quality monitoring strategy.

* * *

[73] Q. What basin would the Water Conservation Areas be in with respect to respective Water Conservation Areas?

A. What do you mean by what basin?

Q. This C-11 West Basin.

A. They are their own basins.

Q. Does it have a name? Is it Water Conservation Area Basin?

A. Water Conservation Area 3A, Water Conservation 3B, I would consider those like a basin.

* * *

[74] Q. Okay. Do you know about the S-13A and what that does?

A. It's a divide structure that divides the C-11 West Basin from the C-11 East Basin, but that's all I know about it.

Q. What's the direction of flow when the S-9 pump station isn't operating for the C-11?

A. Is not operating?

Q. Yeah, when it's not pumping.

A. From west to east.

* * *

[78] Q. And the water in the C-11 is added to Water Conservation Area 3A by the S-9 structure; is that right?

A. During operation of the structure, yes. Actually, operation of the pump, not the structure.

* * *

[82] Q. With respect to the 319 grant proposal, we talked a little bit earlier about the three different components. One of them was, correct me if I'm wrong, [83] spillways at lateral canals that dump into the C-11 to raise water levels and prevent them from entering the C-11.

A. It wouldn't prevent water from entering the C-11. It would increase water levels and stormwater retention in the sub-basins so it would – some of the water that would normally go into C-11, if there wasn't a gate there, would be held in the other basin, so therefore we'd be able to stop it from entering the main canal and possibly eventually the conservation area.

———

Exhibit 5

DEPOSITION OF SHARON TROST
NOVEMBER 19, 1998

Pages 5,6,10

South Florida Water Management District

REGULATORY ACTION STRATEGY

Revised 09/2/98
Work in Progress

* * *

STEP FIVE: SHIFTING MONITORING BURDENS FOR DIRECT STRUCTURES

For all direct structure where no water quality concerns are identified, and for Type 1 or Type 2 structures with identifiable water quality concerns, the District should continue water quality monitoring as previously established. However, for structures where water quality concerns are identified, the District may revise its synoptic survey data collection and analysis as follows:

A. Type 3 *direct structures with identifiable water quality concerns*

If water quality concerns are identified after the first year of monitoring for type 3 direct structures, (privately operated and maintained structures permitted by the District), the District should formally request that the permittee institute a water quality monitoring program, as appropriate, with monthly submittal of data to the District. If the existing permit does not contain a water quality monitoring provision, the District will modify the permit to make water quality monitoring a requirement.

Additionally, owners will be put on notice that dependent on outcome of sampling program, the Type 3 structure owners may be required to submit a plan for water quality compliance for their works and possibly more stringent BMP requirements.

Type 3 Direct Structure Water Quality Monitoring	
Lead Department	Regulation
Support Departments	Office of Counsel

B. Type 4 direct structures with identifiable water quality concerns

If water quality concerns are identified after the first year of monitoring for type 4 direct structures, (privately operated and maintained structures not permitted by the District), the District should contact all owners and require that they institute a water quality monitoring program as appropriate, with monthly submittal of data to the District. Consent Agreements will be prepared to require water quality monitoring of their discharges, as well as to require future permitting.

If owners will not enter into a consent agreement for water quality monitoring then a Notice of Violation (NOV) will be prepared and distributed to that owner. Additionally, owners will be put on notice that dependent on outcome of sampling program, the Type 4 structure owner may be required to submit a plan for water quality compliance for their works and possibly more stringent BMP requirements.

Type 4 Direct Structure Water Quality Monitoring	
Lead Department	Regulation
Support Departments	Office of Counsel

A. Continue monitoring at direct structures meeting water quality standards

Even if a direct structure is in compliance, and no additional actions are necessary, monitoring should continue and be evaluated on a routine basis. The continued monitoring will be required to ensure water quality standards are maintained in the EPA.

Continued Monitoring for Direct Structures Meeting Water Quality Standards	
Lead Department	Water Resource Evaluation
Support Departments	Ecosystem Restoration

STEP SIX: IDENTIFICATION OF UPSTREAM STRUCTURES CONTRIBUTING TO WATER QUALITY CONCERNS:

- ☐ *Identify primary structures upstream from direct structures with water quality concerns*

If the structure which discharges directly into the Everglades Protection Area is not in compliance with water quality standards, or if there are water quality concerns at that structure location, then the District will also identify the contributing area upstream of the identified direct structure.

Identification of Upstream Structures Requiring Monitoring	
Lead Department	Regulation
Support Departments	Office of Counsel

* * *

B. Type 1 or Type 2 upstream structures with water quality concerns

For Type 1 or Type 2 primary upstream structures with water quality concerns, the District should continue water quality monitoring as previously established, retaining responsibility. For these structures, the District should also locate additional secondary upstream structures which could be the sources of the water quality concerns, consistent with the process described in this document.

Type 1 or Type 2 Upstream Structure Water Quality Monitoring	
Lead Department	Water Resource Evaluation
Support Departments	Regulation

C. Type 3 upstream structures with water quality concerns

For structures of Type 3, such as privately operated and maintained structures permitted by the District, if water quality concerns are identified, the District should formally request that the permittee institute a water quality monitoring program, as appropriate, with monthly submittal of data to the District. If the existing permit does not contain a water quality monitoring provision, the

District will modify the permit to make water quality monitoring a requirement.

Type 3 Upstream Structure Water Quality Monitoring	
Lead Department	Regulation
Support Departments	Office of Counsel

D. Type 4 upstream structures with identifiable water quality concerns

For upstream structures of Type 4, the District should contact all owners and require that they institute a water quality monitoring program as appropriate, with monthly submittal of data to the District. Consent Agreements will be prepared to require water quality monitoring of their discharges, as well as to require future permitting.

* * *

Deposition of Dr. Timothy Bechtel
November 23, 1998

* * *

[8] Q. Okay. What is the next document you have brought?

A. This is an updated table of the pesticide detections at S9. It was one additional sampling of that that was conducted since – or the data was compiled since the June list that was put out.

Q. How often are these samples conducted?

A. Quarterly.

Q. Okay. I am marking the table which appears to be – correct to me if I'm wrong, Mr. Bechtel – all pesticides and flow data.

A. The flow column indicates whether the pump station was pumping or not. The pumps were on or off. So that's what it means by flow; yes or no.

* * *

[10] A. I am a senior supervising environmental scientist in the Department of Water Resource Evaluation, and my primary responsibility is to produce mandated water quality reports.

* * *

[27] A. This is considered to be the base line period –

Q. Okay.

A. – for evaluating historic flows in water quality data in the Everglades Protection Area, Everglades Agricultural

Area, et cetera. And that's what he's done. Essentially he's run the load program for that base period.

Q. Okay. And the average value for the base period is 19 parts per billion, so we must be talking about phosphorus.

A. That's what TP stands for; the total phosphorus load.

Q. And the range equals less than detection limit (4 ppb to 172 ppb). So that means that during any time frame you had no detects? In other words, anything less than 4 parts per billion up to 172 parts per billion; is that correct?

A. Yes.

Q. Okay. The next line is grab sample taken when flow was positive, N equal 100. Does that mean 100 of the samples was taken when the S9 pump station was operating?

A. That's correct. 100 out of the 196. Just about half the time there was flow.

[28] Q. Okay. And flow is positive when the S9 is pumping?

A. That's correct.

Q. Now, if the S9 is not pumping, is flow negative?

A. There is no flow. The water on the headwater side of the pump station just sits in the forebay.

Q. Is the forebay – that's the C11 side of the canal?

A. That's correct. It's on the east side of the levee.

Q. And the water in the C11 when the S9 is not pumping, does it flow east?

A. It would flow east under two conditions. If the stage in that canal was high enough and if the S13A structure gates were open, it would flow east. Typically, the flow is either stagnant or it's to the west if the pump station is operating.

Q. S13A is a structure; is that correct?

A. That's correct.

Q. It's a gated structure?

A. I believe it's a culvert with boards.

* * *

[29] Q. Is the water in the C11, does it typically have a high enough stage to flow east if the S13A were open?

A. Only if there was significant rain to raise the level in the canal. C11 west is slightly lower. It's a little bit of a lower elevation than to the east. So it was naturally a marsh a long time ago.

Q. East of the S13A. Does that typically flow east?

A. Yes, it does. That's the dividing point in that basin.

Q. And that flows to tide; is that correct?

A. Yes.

Q. If the S9 is not operating, water in the C11 typically doesn't discharge to Water Conservation Area 3A; is that correct?

A. That's correct.

* * *

[30] Q. Okay. And if the S9 is operating, then water from the C11 does discharge to Water Conservation Area 3A; is that correct?

A. That's correct.

* * *

[33] Q. What causes there to be more water, [34] such that you would want to turn on the S9 pump station?

* * *

A. There's continuous seepage coming from Conservation Area 3. Water seeps through the levee and it winds up in the borrow – I'm trying to remember the name – the borrow canals on the east side of the levee that run parallel to the levee. And those two canals from the south and from the north tend to empty into the forebay in front of the S9 pump station. That's a continuous flow because the water level in Conservation Area 3 is much higher than the water levels outside of the conservation area, so it forces the water through the levee. And when there's rain storms in the area, since the C11 west basin is a little shallower in the area, water tends to pool in that area, and when it reaches a certain height, the pump station operators are obligated to turn on the pumps to keep the area from flooding; the residential area and the few farms that are left there from flooding.

* * *

[36] Q. And then they started the pumps, and what did the water quality look like once they started the pumps?

A. Well, they typically run the pumps from 7:00 in the morning until 3:00 in the afternoon. That's when there are personnel at the pump station. So these represent different days when the number of stations, excuse me, number of samples were taken or number of pumps were running for about a week in September of 1998. The number in the second column is the number of pumps that were running.

Q. You said number of pumps that are running. There's more than one pump?

A. There's a total of three.

Q. At the S9?

A. Yes.

Q. Do you know the sizes of those pumps?

A. They're big. They are very large pumps. I do not know the total capacity for each pump.

Q. Do you know if they contribute any pollutants to the waters that they pump?

[37] A. They're basically moving water from one side of the S9 structure to the other side. They don't – to my knowledge, the pumps themselves do not contribute any pollutants.

Q. How about the – does the operation of the pumps affect the quality of the water?

* * *

THE WITNESS: There's three stations in the C11 west canal that were sampled –

* * *

[38] Q. Okay.

A. – these are the three locations where there are autosamplers set up. The first one is right next to the US 27 Highway. Further down a little bit to the west of I75 where that crosses the canal, and then down near Flamingo Road a little bit to the west of Flamingo Road are the three autosamplers. These were all samples during this particular week, and this was the pump schedule. As you go downstream, you can see that the – they also made a composite sample from these. Concentrations further down the system to the east are higher than they are in the west.

Q. Okay.

A. So when the pumps are pumping, they are moving water from east to west, so they are first picking up the seepage water that has come through the levee since the last time the pumps operated, and that's why these concentrations are relatively low. As the water starts moving from east to west, then they start picking up the higher concentration water down by I75, and eventually this water down by Flamingo Road all starts moving toward the pump station. So in a sense, depending how much water is there, how many pumps are running, how long the pumps [39] are run – and it changes every day, as you can see by all the footnotes. They are moving that water towards the pump station, and these are the concentrations that are collected at this station.

* * *

Q. Okay. So I guess what you are telling me – we were talking about how the pumps operate and how that might affect water quality. If you turn on the pumps just long enough to get the seepage water, you would have a relatively lower quality of water – I mean relatively higher quality of water with [40] respect to phosphorus than if you pumped water from the east; is that correct?

A. That's correct.

Q. So it sort of adds the eastern more polluted water to the seepage water; is that correct?

A. Over time, as the – if the pumps are running, if there's a huge storm, just the total amount of water that needs to be pumped could eventually bring in water from the eastern part of the canal.

* * *

* * *

[48] Q. But there are – there appear to be spikes that are getting close to 50 parts per billion?

A. There's a few there.

Q. In the recent history?

A. These, I believe, are up in the high 30s. [49] 37 parts.

Q. Are those during – 37 parts – can we tell if that would have been during a flow event? It would have to be in order for the autosampler –

A. It would have to be. For the autosampler to take a sample, the pumps would have to be operated.

Q. Okay. So in other words, you're getting 37 parts per billion in – at least once?

A. In that particular week, that's right, because these are set out for seven days.

Q. Okay. So that's an average for a week?

A. That's the average for that week.

Q. Okay. So you had at least one week that averaged 37 parts per billion when the pump was operating?

A. That's correct.

Q. And that means it's discharging into Water Conservation Area 3A; is that correct?

A. That's correct. That was the highest one.

* * *

[51] Q. Do you know what natural background levels are in pristine marshes in Everglades habitat, like [52] you find in Water Conservation Area 3A?

A. They're generally in the range of less than 4 parts per billion to 8 or 9 parts per billion. So 5 and 6 parts per billion would fit within. That's true in the Loxahatchee Refuge, it's true in parts of the Everglades National Park. So that's within the range. Less than 10 parts per billion to the method detection limit, which is 4 parts per billion, in that range is pristine marsh conditions.

Q. Okay. So it's fair to say that the one I was pointing at, the 5 parts per billion and the 6 parts per billion near it, is fairly characteristic of natural background?

A. I would think so.

Q. Okay. And that is lower than the 18 parts per billion we see at the S9 pump station on this particular map; is that right?

A. That's correct.

Q. And does that mean that there is more phosphorus on this map on this day at the S9 pump station than there is in the natural background?

A. That seems to indicate that.

Q. And 18 parts per billion is a – it's higher than 10 parts per billion; is that correct?

A. Yes.

* * *

[54] A. And the second thing is that we know from some of the marsh research that has been done by the South Florida Water Management District, by Florida International University and by the Duke University Wetlands Center that we start to see some effects on periphyton between 10 and 20 parts per billion phosphorus.

Q. And you are talking – when you talk about that, you are talking about vegetative changes?

A. We're talking about changes in the periphyton, which are microbial organisms and algae. So whether it's poorer or not, I'm not qualified to say. But we do see some changes occurring as the concentrations start to increase between 10 and 20 [55] parts per billion.

* * *

A. It appears that given these background concentrations of phosphorus, it appears that the S9 pump station is putting in – discharging water into Conservation Area 3A that's slightly higher than that.

Q. In phosphorus?

A. In total phosphorus.

Q. So it's putting additional phosphorus above the natural background?

[56] A. It appears to be that way, yes, assuming that this is the natural background and that the data that we have for the pump station, . . .

* * *

Q. Okay. Now, looking at Plaintiff's Exhibit 10, which we marked a little while ago, I also see that it appears that DO has 353 exceedances; is that correct?

A. That's correct.

Q. So, over 96 percent of the time DO exceeds the numeric criterion in the water quality standards. That's what this means, right?

[57] A. That's what it means.

Q. And for total zinc there is one exceedance; is that correct? Page 2.

A. Yes.

Q. For turbidity there are seven exceedances; is that correct?

A. That's correct.

Q. And that translates to 1.98 percent of the time it exceeds the criterion for turbidity; is that correct?

A. That's correct.

Q. Does the operation of the S9 pumps correspond to additional turbidity? Do they cause turbidity?

MR. MacLAUGHLIN: I'll object to whether they cause turbidity, but I don't object to him answering questions about his review of the data if there's any correlation.

THE WITNESS: Generally, the turbidity will increase when pumps are running. Not just the S9, but it's typical of most pump stations.

* * *

[58] A. Well, there's four components of a water quality standard, and these numerical criteria is one part. So the first step would be have you had an exceedance of that criteria? And in this particular case, for turbidity the answer is yes.

The second part of the water quality standard has to deal with beneficial use. Is the current beneficial use of the water impaired by this exceedance of the standard?

There's also an anti-backsliding policy that's in the water quality standards document for the State of Florida that has to be examined.

And there is one other component.

Q. What's an anti-backsliding provision?

A. Anti-backsliding provision is that a permit cannot be issued for a discharge or for any activity in a body of water that degrades the water quality standards. I think that's applicable to OFW's, official – Outstanding Florida Waters.

* * *

[64] A. I would say no. I believe S9 pump station is transferring water from one basin to another.

Q. But is it a point source of that transfer?

A. No, I don't consider it a point source, as I understand the definition of a point source.

Q. Okay. What is your definition of a point source?

A. A point source would be some type of a physical structure, whether it be a pipe or a spillway or a pump, that is taking waste water from some type of a process, whether it's an agricultural process or an industrial manufacturing process or some other type of process that generates waste waters, and then concentrates that water into a particular physical structure and discharges it to a receiving water.

Q. Let's assume that – well, back up.

Where did you get your definition of point source? You said, "based on my definition."

A. My experience in working in industry and as a consultant for many years.

* * *

[66] Q. Sure. Is it your position then that the phosphorus discharging from the S9 is not a source of pollution?

A. S9 is transferring that water from one side of the levee to the other side, so –

Q. Well, whether or not it's a transfer, I'm just asking if that's a source of pollution. We'll skip all the other definitions. Is the pollution –

A. We agreed earlier that the concentration of the phosphorus being discharged from S9 into Conservation Area 3 was at times higher than the background areas in those couple of marsh sites a few miles out into the Conservation Area.

Q. Right.

A. So in that case, yes, the S9 pump station is putting in – pumping in higher concentrations than background marsh.

* * *

[67] Q. You mentioned the term "transfer" several times. Where did you get that word from?

A. It's a word that we use here at the District. We convey and/or transfer water all over the Everglades Protection Area as well as Lake Okeechobee and going up the Kissimmee River up to the chain of lakes. We move huge volumes of water continuously.

* * *

[68] A. I would not classify C11 as a stormwater conveyance canal.

Q. How does one classify a canal as a stormwater conveyance? I mean, what characteristics makes it that, if you know?

A. I don't really know.

* * *

[72] Q. Okay. To clarify just a little bit – I think you said this, but to make sure I've got it straight – when you said S9 was an into structure, you meant that it discharged into the Everglades Protection Area?

A. That's correct.

Q. Of which Water Conservation Area 3A is part?

A. Yes.

Q. That's in the Everglades Forever Act; is that right? The designation is in the Everglades Protection Area?

A. Yes. The Everglades Forever Act focuses on the Everglades Protection Area plus the tributaries to it.

Q. You mentioned Outstanding Florida Waters earlier. Which of the waters in the Everglades Protection Area are OFW?

[73] A. Everglades National Park and the Loxahatchee National Wildlife Refuge.

* * *

Q. Is anything being done to modify the quality of the water being discharged by the S9?

A. I've heard some conversations about potentially building at least one structure to try to keep the seepage

water separate from the water of the C11 Canal east of Highway 27.

Q. Why would you want to separate seepage water from what was the water east of 27?

A. I mentioned earlier that the seepage coming through the levee from the Conservation Area 3A is a continuous seepage, and it depends on the differences in the height of the water in the Conservation Area as to the – and the height of the water in the borrow [74] canals on the outside of the levee. A lot of the water that the S9 pump station actually pumps is that seepage water. Leaks through the – seeps through the levees and flows into the borrow canals, flows back to the pump station, and it's pumped back into Conservation Area 3A. So it's a cyclical cycling thing. And except where there's large rain storms, there's no water that's being – no stormwater that's entering the system from the east unless the pumps are running. So if there was a structure there that would essentially separate the majority portion of the C11 west canal, and if there was no rain, the pumps would still have to run, but they would not be drawing that higher phosphorus water into the pumps.

Q. The higher phosphorus water being the water in the canal?

A. Yes.

Q. So the advantage would be you would be pumping lower phosphorus seepage water; it that correct?

A. That's correct.

Q. Do you know if that's actually going to happen?

A. I do not know if that is going to happen.

* * *

[79] A. I have seen – from the S9 pump station looking west into the Conservation Area you can see some cattails along the canals, but that's the closest I've been into that area.

* * *

[81] Q. So the impacts you are talking about are like the heavy cattails we talked about earlier; is that right?

A. Yes. Those would be the significantly impacted areas.

* * *

[82] A. In areas where we have had significant input of large amounts of phosphorus over a period of time, one of the first things that changes is the cattails tends to outcompete the native vegetation that was located in that area, and that's typically sawgrass and rooted floating aquatic macrophytes.

Q. Periphyton being –

A. And periphyton matter also.

Once the cattail stand dominates the area, it doesn't add oxygen to the water the way the rooted aquatic plants and the periphyton and the sawgrass do. The majority of the cattail discharges oxygen to the atmosphere because the majority of the plant is above the water. The stems of those cattail plants are very dense, they're very close together, they have a tremendous shading effect on the sunlight that gets down to the water surface within the stand so that the amount of light that's necessary for

photosynthesis, [83] if there were plants and periphyton there to observe that light to produce oxygen during the photosynthetic cycle, that light's been reduced significantly. The cattails also grow very fast, and as they grow, they shed some of their leaves. That forms a dense mat of material in the water column, and that's being partially decomposed by bacteria. The bacteria use up what remaining oxygen is in the water so that most of the time there's very, very little oxygen in the water. Sometimes it will be zero for 15, 18, 20 hours a day. Even though the sun is out and everybody is happy, inside the cattail stand it's anaerobic. You won't find any fish there, you won't find any aquatic bugs that fish feed on, and it's a pretty nasty place.

Q. Sounds dreadful. So you are talking about a relative dense cattail stand?

A. A monoculture of cattails.

* * *

[85] Q. Are there any other issues, in your opinion, relating to water quality other that than phosphorus and DO in the vicinity of the S9?

A. I think we looked at the exceedance table earlier, and there was 7 turbidity exceedances that have been measured over the last 20 years. I consider that to be a pretty minor – I don't see that – any great concern about that. We had one zinc detection or one zinc exceeding, excuse me, and we have had no conductivity problems there.

Q. There are a couple of other constituents that have had exceedances, aren't there? Unionized [86] ammonia? That's correct, isn't it?

A. Yeah, that was two times out of 252 samples that it was higher than the criteria.

* * *

[87] Q. Can you explain the table to me and what it means? It appears that there have been detects of certain pesticides.

A. Uh-huh.

Q. Atrazine is one; is that right?

A. Reading across the top of the table, there's one, two, three, four, five, six, seven, eight – there's been nine different pesticides detected at S9 from 1992 through February, 1998.

* * *

[88] Q. Okay. Now it looks like with ametryn – correct me if I'm wrong, but this means you have four detects?

A. That's correct.

Q. Since 1992?

A. Uh-huh.

Q. But you only test quarterly?

A. Quarterly. That's correct.

Q. Okay. So that's four out of however many [89] quarters there are since 1992?

A. 29. Total of 29 samples.

Q. So, four out of 29 samples had a detect?

A. Yes.

Q. Then atrazine –

A. 16 out of 29.

Q. 16 out of 29. That's more than half, right.

A. Yes.

Q. Okay. And then it looks like two of – okay, I don't know how to say this one.

A. Diuron. D-i-u-r-o-n.

Q. I'm usually pretty good with these but – and hexazinone, seven?

A. That particular sampling didn't start until this line. That's why these are NA. So that sampling program for that one and the next one there, norflurazon, they started in December of 1994.

Q. So that means for that particular constituent it was 7 out of 14.

A. That's correct.

Q. That's about half of the time, too?

A. Yeah.

Q. Now in my personal experience, that's a fairly significant number of detects; isn't that correct?

[90] A. 50 percent?

Q. Yeah.

A. Oh, certainly.

* * *

[92] A. You could have several pesticides in water column, each one individually being less than a [93] published toxic value, but they could have a synergistic effect. Again, this is you know, hypothesis. But they could have a synergistic effect, which could be toxic to a particular organism.

* * *

[102] Q. Do you have any knowledge about what the various basins and sub-basins are in the vicinity in and around the vicinity of the S9?

A. The predominant basin C11 west?

Q. Okay. Do you know what the others are?

A. No.

Q. Do you know the boundaries of the C11 west?

A. The eastern boundary is the S13A structure, or is it – it's the one we mentioned earlier this morning. S13A.

Q. And what is the –

[103] A. Western boundary would be – I guess it would be the levee of the Conservation Area.

Q. Okay. So is the S9 on the levee or in the levee?

A. The pump station is in the levee

Q. So in other words, the Water Conservation Area is in some other basin?

A. Yes.

* * *

[111] Q. We're looking at Plaintiff's Exhibit 11 at 2-55, and it's Table 2-12.

A. These are all of the structures that discharge into the EPA.

Q. Okay. I see one of them, obviously, is S9.

A. These are the loads for water year 1997, and then this was the ranking of those structures by magnitude. Highest being number one, lowest being number 21.

Q. Highest, the largest amount, largest load?

A. Highest load yes. Greatest load.

Q. So the S9 is the number 7 on the list of 21.

A. For total phosphorus. And it was number 5 for total nitrogen.

Q. So does this mean – looking at the second column on this table 2-12, does this mean that the S9 had 5.4 metric tons of phosphorus discharged through it during water year 1997?

A. That's correct.

Q. What is water year 1997?

A. In this report it represented October 1st, 1996 through September 30th, 1997.

* * *

[113] Q. The document I'm looking at is entitled Draft Water Quality Aspects of the Proposed East Coast Buffer Strip, Evaluation of the C11 West Basin by William W. Walker, Junior, Ph.D., dated January 31st, 1997. How

would this document assist you in expressing opinions about the quality of the water around the S9?

A. Dr. Walker had taken historic data and did an analysis in that particular report and then started looking at what kinds of treatment would be necessary to meet certain phosphorus criteria. (Plaintiff Exhibit No. 12 was marked for identification.)

* * *

[115] Q. What are the water preserve study goals?

A. Well, I have not been involved in that project, but basically they were looking for these buffer zones outside of the Everglades Protection Area but adjacent to the levees where there were a lot of wetlands that were still intact as wetlands and some that were being marginally infringed upon, and wanted to have these preserve areas, buffer areas, created to stop the development from coming right up to the levees, as has happened in part of Broward County. So it's a dual purpose. To keep some wetlands functional [116] as wetlands as buffer zones between suburban developments to the west in each of the counties of Palm Beach, Broward and Dade County as well as be able to in selected basins treat water quality or treat water that has quality problems and potentially use that either for feeding back into the system or for backpumping into the Everglades Protection Area.

Q. Does this have any kind of a direct relationship to the C11 west basin?

A. C11 west is considered to be one of those basins that is within the water preserve area.

Q. Do you have any expertise to talk about the water preserve area and what it does?

A. No, I have not been involved in that project.

* * *

[118] Q. In looking at what was marked as Plaintiff's Exhibit 12 on page 19, that's the William Walker document, there's a section called 6.0, Conclusions, and number 2 under that section indicates, "Historical monitoring data from S9 reveals strong positive correlation between phosphorus concentration and daily flow. Concentrations range from less than 20 parts per billion at low flows to greater than 100 parts per billion" – it should be; it's a typo there – "at high flows.

* * *

[119] A. The other thing that happened is that the land use in the C11 west basin was changing very, very rapidly in the 1990's, what had been farms and pastures were now major suburban developments, and as part of those developments there were lakes and canal systems that had to be constructed within the development to retain certain frequency of storm water flows. I do not know whether it was a one-in-ten-year return storm or a one-in-seven, but they were designed to hold a certain volume of rain water.

In the past that water could hit the ground, [120] the pastures, and run through the ditches that drained those areas directly into the C11 west canal. Once the suburban developments were completed, those became essentially retention systems. Detention systems is the correct term. Detention systems. And the water was allowed to rise to certain points. And then they would discharge or pump it

into the C11 Canal. So during that retention or detention period there was opportunity for particulates to settle. And that was part of the treatment that was actually ongoing. And the quality of the water improved dramatically from the early to mid '90s, and it was nothing like the data that Walker had used in this report.

* * *

[121] A. You can see that the concentrations are all less than 40 parts per billion. So in the two, comparing the two ten-year periods, there's a big difference. And that is what I attribute to the changes in the land use pattern. The sources for that level of total phosphorus spikes are now isolated down in the eastern part of the C111 basin, and that water does – what used to be taken directly into the pump station is now being retained in those huge suburban developments with all of the lakes in the canal system. So the quality of the water that we're seeing, this is the data with the auto samplers, is generally under 40 parts per billion. And that was my major contention; that he wasn't recognizing in how he presented the data – we had a major shift in land use that was improving essentially the runoff [122] characteristics in the western part of that basin. And again, it's the same. These were the same high points that we looked at this morning.

* * *

[125] A. Well, actually the additional development will eliminate some of the still existing uncontrolled runoffs from the open; the pasture. There's still a [126] few pastures out there, and I'm not sure if there's any farms left. It's been a couple of years since I have been down

there. But that open land was rapidly being developed into these large suburban developments.

* * *

[132] A. The regulatory action program will go – it is my guess that they will go upstream in the C11 Canal and look at the additional discharges that are coming in from both the south and the north sides of that canal as part of their mission to identify all the sources to the canal.

* * *

[141] Q. Now, you mentioned when you answered Mr. McLaughlin's questions that there was no numeric standard set yet for phosphorus; is that correct?

A. That's correct.

Q. There is, however, a default numeric [142] standard of 10 parts per billion if rule making hasn't been instituted by a date certain in the future; isn't that also correct?

A. That is true.

* * *

Deposition of Ken Ammon
December 2, 1998

* * *

[53] Q. How about – you're the hydrologist. What kind of basins are there in the hydrology context?

A. In hydrology they are usually referred to as drainage basins.

Q. How many drainage basins are there in the general vicinity of those three structures?

A. I would consider the S-11 Basin – basins, has two. There's an S-11 East Basin and an S-11 West basin, primarily divided at roughly the coastal ridge location. I think there's a water control structure that divides them also. The East Basin flows to the ocean and the West Basin is back pumped.

Q. What back pumps that basin?

A. Runoff is collected on the site and off different various sites in the basin and eventually, if it rains enough, it runs off into a canal known as C-11 Canal. The western terminus of that canal is a pump station called S-9 and when the water elevation reaches a certain point, in order to protect the surrounding properties and adjacent properties from flooding, the pump station turns on, delivers that water from the canal to our conservation areas.

* * *

[58] Q. Once the S-9 was constructed. We'll use that time frame. After that the water wouldn't have gone to the Water Conservation Area?

A. The only water that may have gone there without turning on the pump may have been some seepage associated with higher water levels on the east versus the west.

* * *

[62] Q. In terms of canal water on the surface, would the canal water go to the east as surface water, not passing into the ground, without pumping the S-9 –

A. No.

Q. – pump station? I'm sorry. No is the answer?

A. Correct.

Q. You set a very interesting hypothetical for me. Now, isn't it true that when you turn on the S-9 pump station water from the C-11 Canal discharges into Water Conservation 3A?

A. That's correct.

Q. Does it add water that wasn't formerly in Water Conservation Area 3A?

MS. SOLE-CALAS: Object to form of the question.

BY MS. CARROLL:

Q. Does it add water from somewhere other than Water Conservation Area 3A?

A. Yes.

* * *

[65] THE WITNESS: My understanding is that the South Florida Water Management District has applied

for NPDES permits for certain Stormwater Treatment Areas that are associated with the Everglades Construction Project.

* * *

[74] Q. What happens to the water in the C11 Canal if you don't turn on the S-9 pump station?

A. I would say it would sit there in the canal.

* * *

[113] Q. What basin is Water Conservation Area 3A in?

* * *

THE WITNESS: Um, I wouldn't say that the District has an actual designation as a drainage basin. It does have Water Conservation Area 3A designation that you might use interchangeably with the basin. I would say 3A and Basin 3A might be the same interchangeably.

* * *

Deposition of Bradley G. Waller
December 8, 1998

* * *

[9] Q. Have you qualified as an expert in court or in administrative hearings?

A. Yes.

Q. What areas, can you tell me?

A. Hydrology, water management, and I think on a couple of cases it was in water quality, especially precipitation chemistry, where I had written a paper summarizing some historical information.

* * *

[13] A. I was a project leader on that project in the western C-11 basin, which is – which has structures S-9, S-13A and S-13.

Basically we didn't look at S-13, but between S-13 and S-9 and that report was this one right here, resulted in this report. That was funded by the Water Management District.

And then –

Q. This report you just handed me is entitled Effects of Land Use and Water Management on Water Quality in the Western New River Canal Basin, Southeastern Florida.

* * *

[14] Q. Okay, that's entitled Southwest Broward [15] County Study, 1982?

A. Yes.

* * *

[33] A. It has a section on S-9 in there, looking at the different time-series data, basically started – you started the collection after the USGS finished, right at '78. Broward took over their data collection, Water Management took over their data collection. That's in there.

And these are the documents in support of the Everglades Forever Act.

* * *

[36] A. Okay, I acquired the water-level and discharge data for S-9 from the Water Management District data base called DB Hydro.

I summarized those data into illustrations, one for water level. I plotted the number of occurrences of water-level excedences greater than 4.25 feet above sea level for the period of record.

It shows that since 1970 there has been very few occurrences of a water level rising in its entire basin. I think the greatest was in '93, maybe nine or ten times. Many years after 1970 were zero, which means the water level did not go above 4.25 feet.

* * *

A. As [37] development proceeded, more and more water management was required to keep the water levels low and to prevent flooding.

* * *

[40] Q. – it's entitled Effects of Land Use and Water Management on Water Quality in the Western Basin, South New River Canal, Southeast Florida.

* * *

[41] Q. Okay, on page 1 in the abstract section, last sentence in the first paragraph says that most of the recharge to canals is by induced groundwater inflow and seepage.

A. Yes.

* * *

Q. I guess I should introduce it by saying the paragraph is talking about the South New River Canal basin between water control structures S-9 and S-13A.

* * *

A. Yes, seepage implies let's say a more passive movement of groundwater from the conservation areas or from areas where there's higher water level to areas where there's lower water levels. That's seepage.

Induced groundwater inflow means there's something going on, the induced groundwater flow is when the water table is lowered by either [42] gravity discharge to the east, which is minimal, or pumping to the west, or by – there are a bunch of secondary pumps and control structures also that, in the basin at this time that, as they lower the head in the canal, it induces groundwater flow into the sides of the canal bank or the – or – I guess not really canal bank, canal sides.

* * *

[46] A. The South New River Canal drained straight to the east through the town of Davie, which had a lock and dam that was not very functional, but that drained the water in that area.

And then the remaining of the water drained through the Miami Canal into the Miami River and out into Biscayne Bay.

* * *

[48] Q. So the area of the C-11 west basin before 1913 was basically part of the Everglades, is that correct?

A. Yeah, it was part of the Everglades, it was the eastern edge of the Everglades.

Q. What was the surface hydrology in this area of the Everglades, do you know, the directional flow of the - -

MS. CARROLL: Objection, this area?

MR. MacLAUGHLIN: Of the C-11 west basin, prior to 1913.

THE WITNESS: Prior to 1913 it probably had flow in both directions. You had finger channels that went through the Atlantic coastal region, overflowed to the ocean, you had those. [49] You also had a mounding effect on the Atlantic coastal ridge which pushed water in both directions off of here, so this – you know, again, when you're out in the Everglades you cannot detect visible flow, but the flow, probably to the south-southwest and southwest, I would say it went pretty much all directions, just by filling up into, you know, coming from the north, your highest hydrologic head up there, your slope of land, all

pushing this down, if the water was high enough it overflowed into the east; otherwise, just maintained in the giant Everglades basin and dried up.

And basically, the hydro periods, or where there was standing surface water, would shrink based on the surface topography.

Q. From what I understand, the overall flow from the Everglades is to the south, is that correct?

A. To the south and then, depending on where you are, the Taylor slough goes to the south, Shark River slough goes to the southwest.

[50] But I try to explain it to people, if you think of the Everglades as a large plate with little grooves on the side and some of the groves are wide, some are very small, you're filling it up, it's going almost all directions under heavy, you know, high rainfall conditions.

Q. So the South New River Canal was dredged in 1913?

A. Mm-hmm.

Q. How far was it dredged to the west?

A. It was dredged to the confluence of the Miami Canal, which would be about right here.

Q. Approximately how far west of the existing S-9 pump station would that be?

A. One, two, three, four, about seven or eight miles I would say.

Yeah, I think I stated it, I think it cut off the western eight miles of the canal, I think that's in that report.

* * *

[55] A. There's not a lot of time to establish any kind of a plant community because the water is being pulled virtually every day at S-9 and inducing the groundwater flow. Groundwater is always low in dissolved oxygen, and it's just being induced, flow, to be pumped at S-9, so I'm sure it's about the same.

* * *

[64] Q. Let's go to our situation here, the hydraulic head in the Water Conservation Area is above the C-11 west basin, is that correct?

A. Yes.

Q. Approximately how much higher?

A. I would say, just general observation out here, you're probably talking about ten and a half feet, ten feet, something like that, of the water table.

Again, some years higher, lower in others, but let's call it ten feet. And on this side it's four feet generally.

[65] The pump is made, it's designed to pump with about a 10-foot head, which would mean during a pumping session the canal water declines from four feet maybe down to zero, so it's still within the range of its design, let's say.

Q. Okay, let's turn off the pumps again, stop the pumps.

A. Okay.

Q. We still have this head in the Water Conservation Area?

A. Right, from both sides.

Q. Would there still not be some exchange of groundwater in the C-11 canal because of this –

MS CARROLL: Objection, are you under current conditions or historic conditions?

MR. MacLAUGHLIN: In current conditions.

THE WITNESS: Current conditions, we shut the whole basin off, –

MR. MacLAUGHLIN: Yes.

THE WITNESS: So your flow is going, the northwest corner of the basin being discussed, C11, to the southwest corner, which – I mean southeast corner, which is down here, and I think this is pointed out [66] in this report and also in the report done by the Water Management District: that when everything is shut off, it changes the water management regime here and you have a flow from northwest to southeast, it would be passing through the South New River Canal.

* * *

[68] Q. . . . it says that "more water will have to be backpumped westward into Conservation Area 3 at S-9 to prevent flooding in the basin if it is developed further."

Of course understanding this report was written in 1978, why did you say that?

A. Well, two things: When we did this study the basin was 85-percent undeveloped, that was our calculation. We knew from discussions with Water Management District in Broward County Planning that they were looking at probably, I think something like a ten-fold increase in people living in the basin, and to do that we knew that there were gradients away from C-11 canal, so if you're going to develop farther away from the canal you'll have to have more and more canals connecting back into there to be able to convey water.

So instead of having, every time a pumping session let's say goes down to two feet here but five and a half here, as you develop this it's so well – connected that this whole area will become more like the canal, you actually have to move, well, I would say now you'd have to move almost all the water out of the basin back to your basin divides to maintain the right type of flood [69] protection that they would require.

You do your calculations based on average water conditions, and the closer you are to the canal the more drained it's going to be, so as they develop, I think most of this out here, housing developments now all interconnected with surface water systems, and to maintain the flood protection they have to lower the entire water table, not just like this, but like this, so that you have that extra bit on each of the edges that have to be drained off.

Q. Okay –

A. That's the way we looked at it.

Q. So basically some of the areas further away from the main C-11 canal –

A. They really weren't drained.

Q. Okay –

A. I mean, back when we did the study there was no way to drain the water, it was just basically filling up and evaporating.

Q. Then the second sentence says that: The excess water could be released eastward, but to do so would reduce the water available for aquifer recharge and for prevention of salt – water encroachment." [70] So basically are you saying the pumping of S-9 to the west is beneficial?

A. From a water – quantity point of view, as we develop further, we try to keep – you know, you look at Corps study, you try to keep as much water – what's the term? – higher in the system.

For water – management purposes, I mean as we need more and more water for whatever purposes, we're going to have to look at better ways to manage it, to keep water higher in the system so it's usable for other things besides being dumped to the ocean.

I think this has evolved, this concept has just been evolving over the last few years, and when we didn't expect this many people or this much drainage or this much restoration.

* * *

[74] Q. The question I had was you said the historic flow in the New South River Canal was from the Everglades eastward to the ocean. When you said historic, what did you mean by that? What period of history?

A. Well, from the initial construction in 1913 until basically the closure of the Conservation Areas, which

would include the north-south levy and the pump stations and structures.

Q. I'm not sure I understood that. The historic flow of the water in New South River Canal was from the Everglades eastward to the ocean, when you said it –

A. From the Everglades area right in here, it flowed eastward, essentially past the lock and dam into the tidal where it was connected to the [75] south fork of the New River.

* * *

[77] Q. Okay, and the S-9 structure basically is a structure right in that canal, is that –

A. Yeah, it is – it was placed in the canal, where the historic canal was, a channel.

Q. And then the next statement in that paragraph is: "Thus, the direction of flow of water in the western reach of the South New River Canal was reversed from historic natural conditions."

Again I just, when you said it was reversed from historic natural conditions, you mean natural – what do you mean by natural?

A. Well, natural I think in this context is you're assuming the South New River Canal was already in place.

Q. Okay.

A. Natural is a very difficult term that people try to deal with down here.

Q. You don't mean natural as far as the natural Everglades prior to any construction?

A. No, it's once the South New River Canal was dredged.

* * *

[84] Q. Okay, in number 8 you state that: Protection of the Water Conservation Area 3A environment from increased pumpage at S-9 is of utmost concern. Water Conservation Area 3A is both a navigable water of the United States, as federal statutes contemplate those terms, and an outstanding Florida water."

Is the C-11 canal a navigable water of the United States?

A. The C-11, yes, from what I understand of it.

* * *

[89] Q. So again, if you turned off the pumps there would still be a flow to the east apparently –

A. There would be, yeah, your gradient would be this way.

* * *

[94] THE WITNESS: Yeah, am I going to say the pump adds anything? No.

Am I going to state there are chemicals on this side and there are chemicals on that [95] side and this is the load of those chemicals? I may testify as to that.

Or I may just testify as to the volume of water moving through the pump and recorded.

* * *

[100] Q. Excuse me, 67 canal – that there are gaps being placed in the – in that canal to allow water to flow down into Water Conservation Area 3B.

A. Right.

Q. And that would reach to Everglades National Park?

A. Right.

Q. Do you know where those gaps are? Can you point them out on this map?

A. Yeah, they're about, there's one in existence right now that I know of, they're right along here, along Levy 67.

Q. And –

A. I don't know the exact placement, but there are going to be approximately three from what I've seen from the – these would be coming from the general design memorandum of modified water deliveries to Everglades National Park.

* * *

[101] A. Now the proposal is to put gaps in these levies which, I think there's going to be [102] channels going between, just to ease the flow, and there's going to be structures there that actually blocks the water and forces a higher head to the upstream side, which will re-wet Water Conservation Area 3B.

Then the historic center of flow was right there between these two structures, A and B, on the Tamiami

Trail, then it would bring this water back, this canal and levy would be gone, and the flow would again be as, quote, natural historic as we can recreate.

* * *

[108] Q. Would you call the canals from the S-9 pump station down to the gaps and then to Everglades National Park a direct connection to Everglades National Park?

A. I think that was one of the biggest complaints of the park with the modified water deliveries, is it worked as it was designed, it moved water very rapidly to the S-12 structures.

It's a good delivery channel, it's wide, it's deep, and when we did some of the chemical work in Everglades National Park we noticed that after this went in there was a gradual increase in chlorides, potassium, some of the inorganic ions, and eventually that increase, that change in water quality extended all the way to 10,000 islands.

[109] Q. Okay, so but putting the gaps in there, would that seem like that would actually interrupt that direct connection, is that correct?

A. Right, that's what they're designed to – well, they're designed to do two things: interrupt that direct connection, and also to shunt the water to the east to the historic center of the Shark River Slough, which they know is over there, what you would call Coopertown and Everglades Safari. That is the historic center of the slough, over in that area.

* * *

[110] Q. Based on your expertise would you say that the waters in the canal on the east side of S-9 are a distinct water body from the waters on the west side of the canal?

A. In terms of chemistry? Water level? Source?

Q. So it makes a difference as to how you distinguish, is that what you're saying?

A. Yeah, how are you distinguishing in terms of water levels are different, in terms of chemistry?

One is basically an urban basin; the other one is a marsh and interior conservation area.

* * *

[111] Q. Does the pumping at the S-9 structure divert the flow of water in the South New River [112] Canal?

* * *

THE WITNESS: Diverts it from what? Diverts it from direction of flow?

MR. MACLAUGHLIN: Mm-hmm.

THE WITNESS: From historical direction of flow?

MR. MACLAUGHLIN: Yes.

THE WITNESS: Yes, it does.

Let me just add one thing on that, the, Water Management District and the USGS designate upstream and downstream different at these structures. USGS always

designates it as what would flow naturally, which is toward the ocean.

And your headwater and tail – water designations are opposite that: you consider the headwater on the east side and the tail water on the west side.

* * *

[114] Q. Is there a hydrological connection between the water conservation and the C-11 canal?

A. Hydrological connection?

Q. Yes.

A. Via seepage? Yes.

Q. There is, okay.

A. Seepage is not intermittent, it's a continuous phenomena.

* * *

[116] Q. Okay, if we removed – and excuse me for being repetitive here, I'm trying to wrap up before we take a look at the documents – but if we remove the S-9 pump station and the other structures in the C-11 canal, I believe it was your – which way would the water flow?

MS. CARROLL: Objection, under what conditions? The form is not clear.

BY MR. MacLAUGHLIN:

Q. Which way generally would the water flow?

A. If you just removed them, left the levies in, the water would flow in the east.

Q. Would the levels in the Water Conservation Area eventually lower?

A. Yes.

Q. How much, do you have any idea?

A. Just uncontrolled discharge?

Q. Mm-hmm.

A. Just guessing, maybe depending on the location, three or four feet.

Q. Would that be beneficial?

[117] A. To?

MS. CARROLL: Objection, form

BY MR. MacLAUGHLIN:

Q. Beneficial to the Water Conservation Area as far as –

A. From a hydrologic point of view?

Q. Yes.

A. Water-management point of view?

Q. From a water-management point of view.

A. No, it would not be beneficial.

Q. Why not?

A. Because you would be draining stored water that is used not only by the urban users, but for in the long run the restoration of the remaining Everglades. You would be going back to the uncontrolled drainage of the 1940s.

* * *

[128] Q. Okay, there was quite a lot of discussion about the S-9 pump station. Is it fair to say that the S-9 backpumps into the Everglades?

A. Yes, that's a classic backpumping station.

Q. What's that mean, to backpump?

A. Backpump means you're pumping against a gradient or you're pumping against what would flow naturally the other direction, or another direction.

* * *

[129] A. So historic flow conditions in the South New River Canal would have been from the west or the heart of the Everglades out to the coast, tying into the tidal canals.

* * *

Q. Is it correct to say that the C-11 west basin is a separate basin from the Water Conservation Areas?

A. It's, from a water-management point of view, it's a separate basin, because each basin has certain engineering design characteristics so they can size canals, water-control structure, pumps properly, so you don't have a lot of interconnection between basins.

And they have, their surface water management people do a lot of work, you know, [130] designating these basins and making sure that structures within those basins are functional based on the interconnections.

But for the most part they try to maintain separate basins, even though we deal with the water table situation down here.

Q. Is there – strike that.

Is there hydrologic connection in a large area in South Florida, or are they – is hydrologic connection in fairly small areas?

MS. SOLE-CALAS: Objection, form.

MR. MACLAUGHLIN: Sorry, I wasn't listening.

MS. CARROLL: I think he can answer the question.

MR. MACLAUGHLIN: Go ahead, answer it.

THE WITNESS: Throughout most of South Florida there is a continuous water connection. We don't have classic basin divides and watersheds and everything.

There are some areas where the water level is higher, you have seepage from one side to the other, but in terms of a continuous water surface, it's pretty much throughout South Florida, even though we [131] designate basins and artificially divide up watersheds.

* * *

Q, Mr. Waller, you were just asked about separate basins, and unfortunately I didn't catch the basins that you were asked about. The C-11 west basin, what was the other basin –

A. Well, there are just other basins that are designated by the Water Management District, by [132] the surface water management people, and a whole series of reports have been put out by Jim Lane, Cooper & Lane, they're familiar to me.

And because these basins are used to, you know, as Water Management District permits any type of use, secondary canals, structures, weirs, culverts, they have to know what basin they're going to be in, what is the primary control of the water levels in that basin, to make sure there's not a lot cross-connections or overloading one particular basin in favor of another.

So that's why these are designated, even though they're artificial, let's say, they're still designated as basins, for permitting purposes more than anything else.

Q. There still can be hydrological connections between these various basins?

A. Yes.

* * *

Deposition of Tommy B. Strowd, Jr.
December 14, 1998

* * *

[5] A. I'm the Director of the Operations Division.

Q. And what are your responsibilities as Director of Operations?

A. I'm responsible for the administration of the operations division at the District, and the primary purpose of that division is to control water movement to meet the mission objectives of the agency.

* * *

[8] A. This is the excerpt from the structure book for the S-9 structure. It says: "The purpose of the structure is to pump surplus water into the conservation area 3 via the South New River Canal from the Davie agricultural area west of control structure 13-A, and to pump seepage under the levees 33 and 37 back into conservation area 3-A, at a rate of three quarters of an inch per day from the tributary drainage area, plus approximately the same quantity of seepage."

* * *

[10] A. In a general sense, I would say the C-11 basin would include both sub-basins, the C-11 west and the C-11 east. When we talk about the C-11 west basin, I interpret that to mean just the western sub-basin of the overall C-11 canal.

* * *

[11] A. Yes. In general. I mean, the specifics of the design were based on a particular event that the Corps

used, a particular storm event that the Corps used in the design of the system, that it could pump three quarters of an inch a day, and an equal amount of seepage. When you don't have significant rain in the basin, you obviously pump less runoff, and so therefore, in an average it operates that way, but at any specific time, it can vary somewhat.

Q. Does the Corps set a rain schedule for the S-9?

A. Only in a general sense. They established a level in the C-11 canal above which pumping should generally be initiated, and they set a lower level at which point pumping should be terminated, or shouldn't go below.

Q. What are those levels?

A. The upper level is 4 feet NGVD, and the lower level is zero NGVD.

* * *

[12] Q. So just to put it in laymen's terms for me, does this mean when the canal gets to 4 feet above sea level or above, then you run the S-9 pump station, and then when it returns to sea level, you stop running the pump station?

A. In general terms, yes. But for the specifics of the elevation, yes, you're correct. There are times, because of just operational reasons, we operate the pumps at different levels. But that's generally correct, the statement you made.

Q. When would you operate them differently than this numeric trigger that I describe?

A. Well, a lot of times, in advance of storm events, we will draw down the canal in preparation for that storm event, even if we are below 4 feet NGVD, to provide some additional capacity in the canal.

Q. How far do you draw it down?

A. Typically around 1 foot NGVD. But it could vary, dependent upon the severity of the storm [13] that we see and the time of year.

* * *

Q. And is it is correct to say that the S-9 pump station discharges into water conservation area 3-A?

A. In a general sense, yes.

Q. Could you elaborate, if there are specifics?

A. As far as specifics go, I mean, it actually discharges into the excavated area that is the South New River Canal, which extends west onto the Miami Canal. However, when water levels are above the bank of that canal, it's essentially a continuous water body, and so it's probably more accurate to say it discharges into 3-A.

* * *

[14] Q. What happens to the water when it's discharged from the S-9?

A. That really depends upon the different hydrologic conditions in that basin as to where water may go.

Q. Can you describe for me the different types of scenarios we can see there?

[15] A. Sure. It's complicated by the levee systems that's there, but generally speaking, when water levels are

above – let's start with when water levels are below the canal banks. Then the water generally stays confined to the canal system. So some could move to the west, toward the Miami Canal, some could move south down the L-67A borrow canal. And depending upon general water levels, water might even go north up the L-68A borrow canal.

Q. It can go north or south on the L-67A.

A. It could. Well, it could go south on L-67A, or go north up the L-68A, excuse me. And that would be a situation that would be generally characterized by very dry conditions in the conservation area.

If the conditions were wet, as I mentioned earlier, where you've got the area sort of behaving as a contiguous water area, water would tend to sort of move out into areas of the marsh. However, the existing canal network that I've just referenced is sort of the path of least resistance.

So while you would have water moving into the marsh to some degree, you'd still have a significant quantity of water moving down the canal systems, possibly in a fashion that I enumerated [16] earlier for a dry condition.

Q. So you're saying even when the water is above the canal bank, you are going to see a lot of the water travelling the same way?

A. Right. Right.

Q. Except that some of it will go directly into water conservation 3-A?

A. Right, into the marsh.

Q. The water that goes into the L-67A and heads south, where is the next destination of that water?

A. Again, that sort of depends on hydrologic conditions and what the specific gate operations are for structures that are along that path. But the first point that it could deviate out of the L-67A canal would be at the S-151 structure. That's a structure that's located in the Miami Canal at the intersection of L-67A. So if 151 was open, water from L-67A could get into the Miami Canal, and move sort of south – excuse me, in a southeasterly direction down the Miami Canal.

If that structure was not open, it was closed, then water would probably continue then to move south in the L67-A borrow canal toward Tamiami Canal. And at that point, there are a number of [17] directions it could go. If you want me to enumerate those, I can.

Q. Please do.

A. Again, it depends on which structures are open or closed, but if S-333 was open, water could go in a southeasterly direction into the L-29 borrow canal, which would then allow it to go under Tamiami Trail and into North East Sharks Slough.

It also has the option of going west, depending on the configuration of 12-D. it's possible it could go west into upstream of the S-12 and then go under Tamiami Trial that way. And I believe there may be some other configurations, I'm just not able to recall specifically this configuration. I'd have to look at that in detail to be able to tell you every possible angle.

* * *

[18] Q. Okay. How about the water coming down the L-67A, hasn't the Corps started the process of putting the gaps in the extension?

A. Yes. That is correct. I forgot about that. They had last year opened the gap in L-67A, about a thousand feet wide, which would allow water in the L-67A borrow canal, when it's above the normal ground level, to flow southeasterly into conservation are 3-B.

Q. Right.

A. And that was something recently done, last year.

Q. Isn't it correct that they are going to add additional gaps to L-67A?

[19] A. It's my understanding it is part of the modified water deliveries plan that the Corps presently has authorized. There is provisions for some additional gaps. I'm not sure of the number, of specifies, but that's my understanding.

Q. Okay.

A. And there may be others that are proposed, or changes to that that may be proposed as part of the Restudy.

MS. CARROLL: Just for the record, I'm not going to attach the District Structure Map, it's something that we're all very familiar with, so I don't think it's necessary, but I'm going to identify it for the record. It's the South Florida Water Management District Structure and Canal Locations Map, revised 9/29/93. Actually, let's go off the record.

* * *

MS. CARROLL: For the record, we have modified that decision about documents, and instead have marked the structure and canal locations map that we have been discussing as Plaintiff's Exhibit 9 for deposition purposes.

* * *

[20] Q. Now, water conservation area 3-B is approximately where I'm gesturing, sort of south and east of the L-67A and L-67C; is that correct?

A. Yes, that's correct.

Q. in that water conservation area 3-B, does it generally travel south?

A. Yes, it does. I believe the topography is more southeasterly, it slopes down as you move to the southeast. But because of the L-30 levee, once it reaches that point, then it will tend to move south until it reaches the L-29 levee which I mentioned earlier.

Q. Right. And the L-30 levee sort of runs north and south, so it prevents it coming to the coast?

A. Right.

* * *

[21] Q. Okay. Is it fair to say that water conservation are 3-B is Everglades?

* * *

THE WITNESS: I would clarify it by characterizing it as the rim of the Everglades. It's not Everglades in

its natural condition, because of the levees and the canals that we talked about.

BY MS CARROLL:

Q. Okay. It is part of Everglades Protection Area; isn't that right?

A. Yes.

* * *

[24] A. The design of the Eastern C-11 canal and the S-13 structure which is further to the east –the design of 13 and the canal were just to handle the runoff from the C-11 east basin. They don't have the capacities to additionally handle the runoff or the seepage from the C-11 west basin. So this divide structure was needed to separate those two basins, so that water in the C-11 east basin could move east through S-13, water in the C-11 west basin could move west through S-9.

Q. Now, looking at the C-11 east basin, is the S-13 the only way that water exits from the east basin C-11 canal, that portion of it?

A. Yes. It's possible it could go west, but that would be a very rare situation.

Q. Is the S-13 A ever opened?

A. Yes.

[25] Q. And what happens when the S-13A is opened?

A. Typically, S-13A is opened when there is heavy rainfall in the basin, in the western basin, and the C-11 Eastern canal has additional capacity. At that point, 13-A

can be opened and some volume of water can be let from the C-11 west basin east, and it would discharge to tide through S-13.

A. So it's fair to say that the C-11, generally the water in C-11 generally discharges to the east if the S-9 isn't operating?

MR. MACLAUGHLIN: If it is not?

BY MS. CARROLL:

Q. If it is not operating and if the S-13A is opened.

A. Could you clarify that or repeat that for me?

Q. Sure. I'll repeat it. If the S-9 isn't operating, and the S-13A is opened, is it fair to say that the water in the C-11 canal generally discharges east?

A. I would say under that specific scenario, it would discharge east. We don't generally do that specific operation, so I guess I want to separate the hypothetical from what's generally done.

Q. Right.

[26] A. But for that specific example, where S-9 would not be operating and S-13A would be opened, presume that S-13 is operable, then water would tend to move to the east.

Q. I'm not sure how to ask this question but I'm going to try, and maybe you'll help. Is it fair to say that absent – strike that. Let me back up a little bit

What kind of structure is the S-13?

A. The S-13 is combination structure. It has a pumping station and a gate structure that are located side by side.

Q. So let's change my hypothetical again. Let's say that the S-13 pump isn't operating, but the gates are open.

A. Okay.

Q. Then S-13A is just a gate structure; is that right?

A. Uh-huh.

Q. And the S-13A is open, so two open gates, no pumps running, no S-9 running; does the water tend to go east still?

A. Yes. Depending on general elevations in the canal, but generally, yes.

Q. Now, what are the different scenarios of [27] pumping which occur in the C-11? Those are the only three structures there, right?

A. Right.

Q. I want to know what combinations of those three structures you use and operate in the C-11 canal.

A. We have used every possible combination of them over the years. I'll start with the most common first.

Q. Okay.

A. Okay. In wet conditions, 13-A will be closed, S-9 and S-13 will both be operated to move water – 13 would move water to the east, S-9 would move water to the west. Now, going back to S-13, there are two conditions under which it could operate, pumping or under gate control, and

that would just depend on water levels out here, tide, and water levels. In other words, depending on what water levels there are would determine whether or not 13 would pump or be opened.

Another aspect of that which also has an influence on whether we pump at 13 would be the time of day. We generally try to have people at the station during the day. During the evening, based on hydrologic conditions, if we feel we could go [28] through the night with a gravity discharge, we would not call someone out to pump, we would open the gate remotely from the control room until the day crew could come in.

If the situation was such that it was heavy rainfall and we felt like we couldn't go through the night, then we would call a crew out to pump S-13, and at that point the gate would be closed and we would just be more of a pump. So that kind of describes normal operations for each of those two basins.

Q. Under wet conditions?

A. Under wet conditions.

Now, in situations where we have rainfall unevenly distributed under wet conditions, let's say for instance if C-11 east was getting a tremendous amount of rain, and not much rain was happening in C-11 west, again, we would be moving as much water as we could through S-13. If there were capacity available, it's possible that we could open 13-A and move water to the western basin.

But that is very, very infrequent. As a matter of fact, I don't think since I've been in the division, we've done that, to my recollection.

More commonly what happens in the C-11 [29] west in heavy rainfall conditions is that we will be pumping S-9, and additionally, to get some additional capacity, if we don't have heavy rainfall in C-11 east, we will man S-13, or have the structure operated manually, and open 13-A to allow some amount of water out of both ends of the C-11 canal, the east and the west.

Another scenario, which is somewhat analogous to the situation I mentioned earlier at S-13 about having the pump station staffed during the evening, if water levels come up during the evening and we feel that we can handle it with the limited capacity of 13-A, we would just send someone out to open 13-A, not pump S-9 that evening, and allow water to bleed out to the east through 13-A and 13. And when the crew comes on in the morning, they would initiate pumping at S-9, at which point we would close 13-A.

And I may not have covered every possible combination, but those are generally the sort of wet condition operations.

In dry condition operations, we are in the conservation mode, at which point we try to hold as much water in the system was we can. And in those scenarios, we really try not to pump S-9, open 13-A [30] or 13, to hold water in the system, to maintain, to the extent we can, ground water elevations in the evening.

Q. Let me stop you there for a second. You said you were trying to maintain the water levels and conserve water in the system. Which system are you talking about?

A. The C-11 system.

Q. Okay.

A. Or the regional system in general, but more specifically the C-11.

Q. Okay. So when it's dry, you try and keep the water levels up in the C-11 west system, and when it's wet, you try to keep them down?

A. Right.

Q. What's the proportion of dry time versus wet time, as you've been describing those for me?

A. It's difficult to characterize in general, and I haven't gone through the data to really be able to specifically say, so I really can't answer that question.

Q. Just to help me get an idea, is it fairly equal, or is one significantly greater than the other?

A. It's really difficult to characterize. [31] I'd say roughly even, because we do have a wet season that's roughly equivalent to the dry season. So over a long period of time, I would presume that would – but I don't know that I could point to specific operations and water deliveries and expect for those to be equal.

Q. Okay.

A. Okay.

Q. The S-13, which is sort of on the eastward side of the map we've got here, where does that discharge to when the pump is operating?

A. Okay. It is discharged generally to tide, and then there is a bifurcation of the canal that one goes to the Dania cutoff canal, and part of it goes down Old South New River Canal to the North New River Canal. And

again, both those discharge to tide, I believe in the Intracoastal Waterway.

Q. And it's the same when it's gravity driven and when it's pump driven?

A. Yes.

* * *

[32] Q. Is it fair to say that the C-11 canal [33] collects water from various sources for water management purposes?

A. Yes.

Q. I'm just trying to get an idea, and stop me if my vernacular is inaccurate. So all the water is drawn together into the C-11 canal – not all the water, but a lot of water in the system is drawn together in the C-11 canal in order to convey it out of the system or keep it in the system; is that accurate?

A. In general, yeah.

Q. If I were to go out and look at the C-11 canal, is it something I could easily identify as a canal?

A. Yes.

Q. So it's not hidden, it looks like a canal?

A. Right. Right.

* * *

Q. When water finds its way into the C-11 canal, are there places in the canal where it overflows back out into the system, or is it pretty discretely in the canal?

[34] A. I would say it's predominantly in the canal. There are probably low land areas adjacent to the canal where at high levels, water could overtop that portion of the bank. Obviously, there are secondary ditches that are connected to C-11, and water could back up from the canal into those ditches."

* * *

Q. What is the purpose of those – what did you call them?

A. Secondary canals.

Q. – secondary canals?

A. Primarily drainage flood control from the adjacent lands. But they also provide water quality – sorry, water supply elements to those lands, because water can be delivered to those lands by raising the canal level in C-11 and allowing that water to back up into the secondary canals.

* * *

[35] Q. What is the purpose of that borrow Canal?

A. That borrow canal's design was to provide a drainage mechanism for Highway 27. This particular structure also influences the drainage capability of a trailer park that's located a mile or so to the south that's on the west side of 27.

But another function that this structure has, is it does collect seepage which makes its way under the L-33 borrow canal; it does collect a component of the seepage and deliver it back to the C-11 canal.

* * *

[37] Q. What does the term "basin" mean in that expression, C-11 basin?

A. Generally, it describes a contributary area that contributes storm water runoff to a particular location. So the C-11 basin generally describes the lands which contribute storm water runoff, surface water runoff to the C-11 canal.

Q. And so it's fair to say that the S-9 pumps waters in the C-11 canal out of that basin?

A. Yes.

Q. Do the water conservation areas have a basin designation?

A. In so far as the District has identified the various drainage basins within a boundary, yes, there is a boundary that is identified as water conservation are 3-A boundary, or 3-B boundary.

[38] Q. So it's kind of like a basin in and of itself?

A. Yes.

* * *

Q. Now, you discussed seepage with me a little bit here, and you are talking about seepage from the conservation areas; is that right?

A. Right.

Q. Looking at this structure map which is Plaintiff's Exhibit 9, does the seepage occur in other areas relating to the water conservation areas?

A. Yes, It seems to be prevalent – there is to some degree seepage from conservation area 1.

Q. To where?

A. To the urban areas, and really to the canal network immediately east of conservation area 1, within the Lake Worth Drainage District in Palm Beach County. There is seepage from [39] conservation area 2, into I think it's the L-38 canal. There is a good amount of seepage that comes from conservation area 2-B in the North New River Canal. And of course we talked about the seepage in L-33 and L-37 into C-11. There's also seepage from L-33 into the C-9 basin.

And then there is also a seepage component from L-30 into the Pennsuco wetlands and western portion of urbanized Dade County. We have seepage issues all along L-31 north adjacent to the Everglades National Park, and even to some degree, into the C-111 basin.

Q. That's pretty much all along the eastern Everglades remnant; is that correct?

A. Correct.

Q. So everywhere you have Everglades on the east side, you've got some seepage issues?

A. Right.

Q. Do you have any seepage issues on the western side of the water conservation areas, like around the L-20?

A. I think it's the L-20. Let me look at this map here. L-28.

Q. L-28?

A. L-28. I'm not as familiar with those. [40] Generally, the northwest corner of conservation area 3-A is drier than the southern portions, so I'm not certain that there's seepage issues. But I'm sure conditions could exist where there would be seepage from that area.

Q. Are there seepage issues around the EAA?

A. Yes.

Q. Which way is water seeping there?

A. Again, depending upon the hydrologic conditions, but when the conservation areas are up high, there can be seepage from the conservation areas into the Everglades Agricultural Area.

Q. Which, for the record, is that area sort of north and west of the conservation area?

A. Right.

* * *

[41] Q. I see. So the white area is the South Florida Water Management District?

A. Correct.

Q. And then the brown area is Big Cypress area, and the green area is Everglades National Park, and then the sort of teal-colored area is the conservation areas; is that right?

A. Right.

Q. Okay. It's kind of an odd shape for the South Florida Management District. Do you know of a reason why it's sort of jerrymandered the way it is?

A. Not specifically. However, it's my understanding that when it was developed, the intent was to encompass the main land areas that contributed to the Kissimmee-Okeechobee-Everglades drainage system – hydrologic system, I should say.

Q. So it's fair to say that it's all sort of hydrologically connected?

A. Yes.

* * *

[44] Q. . . . what are the sources of water entering C-11 canal?

A. I guess in a general sense, probably three general sources: One being direct rainfall on the canal, the second being storm water runoff from the contributing area in the basin to the canal, and the third being seepage input from the conservation area.

Q. Is there any ground water contribution to the canal, other than seepage from the conservation area?

A. Yes. Direct rainfall – as a portion of [45] direct rainfall infiltrates directly into the ground water table, that probably migrates either directly underground to the C-11 canal, or to a secondary drainage ditch, which would then convey it as surface water to the C-11 canal.

Q. So it would be fair to say that ground water is also an additional, or it's another expression of the rainfall that is entering the C-11 canal?

A. Yes, that's correct.

Q. Do any of the structures that you know of, private or public, influence the ground water table in the area, and if so, how?

A. I can't point to specific examples, but I would say in general, some of the systems in this basin are designed to conserve to some degree storm water, but at the same time, not compromise flood protection.

Many of the ones that were developed in accordance to the District's permit criteria or the county's permit criteria fall into that category; that is, where the surface water management systems attempt to do two things, maintain some level of ground water for conservation purposes, and the second being to convey it to discharge points for [46] flood protection. So in that sense, they would to some degree affect the ground water table adjacent to them.

Q. What kind of structures or systems are used to influence the ground water in this way?

A. We talked about a few of them. You could have corrugated metal type structures, or even concrete structures with risers that have stop logs or weir crests to hold water behind that structure at a certain level.

Many of the newer developments have lake systems, which have a tendency to attenuate levels, and then can contribute water to the ground water system. Again, those are typically more passive.

However, there are some systems that are pumped, and those primarily are for flood protection, some secondary systems that have pump outfalls. And again, the pump on-and-off trigger levels are set to provide a level of flood protection, but they also, I'm sure, have an element

of ground water control as well built into their operating criteria.

* * *

[47] Q. To your knowledge, is pollution entering the C-11 canal?

* * *

THE WITNESS: I guess the general category of pollution, I'm not – I can't address that. I am familiar that there are some constituents, water quality constituents that are issues in this area.

BY MS CARROLL:

Q. Which constituents are issues in this area?

A. Just from a general standpoint, phosphorus, dissolved oxygen, Ammonium – Ammonia. There may be some pesticides that are issues.

* * *

[50] Q. The S-9 pump station, how many pumps are involved at that station?

A. There are three.

Q. And what are their sizes and configurations?

A. If I can refer back to Exhibit 2 for that. It says: "The pumping station is equipped with three Nordberg 122-inch diameter vertical lift pumps, each rated for 960 cubic feet per second at a 10.4 foot static head." I guess that generally describes the technical specifications. I don't know if that answers your question or not.

Q. Right. So each one of the pumps can pump 960 c.f.s.; is that correct?

A. That's correct.

Q. Do they run all at the same time?

A. No. Only during – I won't say only during. To answer your question specifically, you can run one pump, two pumps, or all three, and depending on the conditions, we will do that.

Q. How does the water – strike that.

What do the pumps do with the water in the C-11 canal?

A. In very basic terms, they basically take the water out of the C-11 canal east of the L-37 and [51] the L-33 levees, and they generally just pick it up and put it over on the west side of the levee through a pipe system that's part of the pump station.

Q. And correct me if I am wrong, there are three pipes on the west side; is that correct?

A. Correct.

Q. And the water discharges out of those three pipes?

A. Right. That's correct.

Q. If you don't run the S-9 pumps, any of those three pumps, the water doesn't go out of those pipes; is that right?

A. That's correct.

Q. The water pretty much stays in the C-11 canal?

A. Right.

Q. Is it fair to say that you're adding water from C11 to the water conservation area?

A. I don't know if adding. I guess moving water into it from the east side to the west side. Whether it's an addition or not, I don't know.

* * *

Q. Well, we were talking about there were three pump stations. If you just operate one of those pump structures, does the water just discharge from one of those points?

A. Right.

Q. I'll call them pumps one, two, and three.

A. Okay.

Q. If I operate pump one and pump three, then I have water discharging from pipe one and pipe three; is that correct?

A. That's correct.

* * *

[63] Q. Is the S-9 a Critical Project?

A. It's my understanding that the S-9 structure is a component of a Critical Project that deal with a little larger area, the western C-11 basin.

Q. What does it mean to be a Critical Project?

A. I can give you what I think is a general definition of that, and that is projects that were identified through

the Restudy process that were accelerated to be constructed, or planned and constructed early on in the process which was authorized through the Water Resources Development Act recently passed, I don't know, '96 or '97.

* * *

[65] Q. Were Critical Projects identified in part because there was a problem to be addressed in the Critical Project area?

A. That's my understanding, yes.

Q. What was the problem to be addressed in the C-11 basin?

A. My understanding was the general water quality concern for water being discharged from C-11 into conservation area 3.

Q. Do you know what those water quality concerns were?

A. Not specifically, no.

Q. Okay.

A. Let me go back and clarify that.

[66] Q. Okay.

A. Phosphorous obviously was the one that was a topic of a lot of discussion, but not to say that was the only one. That's the one most people focused on as an issue.

* * *

Q. Has the C-11 Critical Project been implemented yet, or is it something that will happen in the future?

A. It's something that will happen in the future.

* * *

[68] A. Well, one of the things that happens in all the canals in South Florida on the urban side is that as water levels are drawn down, ground water that's in the adjacent ground will come out of the sides of the canal, infiltrate from ground water into the canal.

Typically, that has a low dissolved oxygen content because it's underground, it's not subject to biological activity, and it has a long residence time. And so by maintaining higher levels and less fluctuation, you reduce the potential inflow of that ground water.

* * *

[70] Q. If the water levels rise in the C-11basin, what are the types of effects that you see?

* * *

Q. Okay. You start pumping at the S-9 when the C-11 canal gets to 4 feet above sea level; is that right?

A. Uh-huh.

Q. Let's say you let it go to 5 feet above sea level, what would be the visible or recognizable impacts in the C-11 west basin.

A. There are probably some low-lying areas at five that you would start to see some impacts. By that, I mean, you know, you might see surface [71] ponding on land. Certainly in some of those areas, the ground would be very wet.

But the real critical nature of that would be during the storm event, if you had that antecedent condition, where basically all the soil storage was taken, you would see a significant amount of flooding. So in a dry condition, it could just look real wet, but in a rainfall event, it would be the predecessor to probably some significant flooding.

Q. The C-11S is a canal, right, it's a canal?

A. Yeah.

Q. "C" means canal, right?

A. Yes.

Q. Okay. Has it ever been explored, the possibility of increasing discharges through the C-11S for the C-11 canal for flood control purposes?

A. Let me make sure I understand when you say "increasing discharges". From C-11 to C-11S?

Q. Yes.

A. No. To my knowledge, that's never been evaluated as an option.

Q. Is it a potential option?

A. I'm going to say anything is a potential [72] option. It has some downsides and some constraints that would need to be evaluated.

* * *

[73] Q. So does that mean some of the water from the North New River Canal also can end up in the C-11 canal?

A. Downstream of S-13, but not upstream of S-13.

Q. When you say upstream, you mean west?

A. I mean west, right. So I mean, it's possible if you had a high-flow condition in the North New River Canal, some of that water would come back into the lower reach east of S-13. But that's generally at sea level or a few feet above, and that reaches higher than that. It would really be a rare [74] situation for this water to come back around and go west. And again, I'm confining what we are talking about to the area east of L-37 and L-33. There is a whole network of remnant ditches, or even project canals that are out here that interconnect in the conservation area.

Q. Do you know what different types of uses contribute water to the C-11 canal and the C-11 basin?

A. Just general land use. I know there is a mix of urban and agricultural type land uses. I presume there is some industrial, but I don't know that for a fact. But predominantly, it's my understanding it's urban and some agricultural.

* * *

[81] Q. What were the flows of the Historical Everglades?

A. Well, just real general, is the sort of typical scenario of the Kissimmee, Lake Okeechobee, Everglades ecosystem, where runoff from the upper chain of lakes in the Kissimmee region would flow through the Kissimmee River into Lake Okeechobee through tne course of the natural system. When Lake Okeechobee would rise, it would spill over its southern bank and then flow through the natural Everglades system, sort of in an arc, a sweeping motion towards the southeast initially, and then it [82] would turn as it came into the Dade County area, back to

the southwest, as it went through Everglades National Park and Florida Bay. And again, the only area that wasn't Everglades was probably along the coastal ridge.

Q. Tell me if you agree with this or not. It's been stated to me before that hydrologists coming into the Everglades system from outside find it very unusual, or non-characteristic of hydrology they experienced in other places. Would you think that's generally true?

A. I would say particularly if you're talking – I agree in the context of the United States. I don't have a relative measure of comparison for people from other countries that might have experienced similar systems. But my general experience has been hydrologists and engineers who have come from other parts of the country find this a unique system.

Q. What is it that's unique about it, hydrologically?

A. One thing would be the sort of lack of topography, that's the comment I probably get most often that most other hydrologists and engineers are used to dealing with, you know, tens of hundreds of [83] feet or more in elevation. The flatness complicates the interconnection of drainage basins, which makes it very difficult to say this basin is independent of other drainage areas.

And so it's sort of the kind of inter-connectivity of the system and its flatness, and the slowness in which it responds to regional rainfall. With the exception of the east coast, the Everglades really responds pretty slowly to changes in climate and rainfall. In other parts of the country, characterizations are made that things happen a lot faster. So those are just some typical examples. There may be many more, but . . .

Q. What is the history of the South Florida Flood Control Project?

A. I'll start at the authorization, and maybe go back a little before that. In the late 40's, a couple of hurricanes came through back to back, and essentially inundated the Florida peninsula from Florida Bay all the way to Jacksonville. And that was met with a public outcry from the people in the state that something needed to be done to remedy that situation, at which point, a plea was made to the federal government.

And the Corps of Engineers came into the [84] picture with a plan, to deal not only with flood control issues, but to deal with water supply issues that were becoming evident as a result of the canals that were dug by the Everglades Drainage District. Not only did they not do very much for flood control, they did a lot to damage water supply, and created areas where we were susceptible to salt water intrusion.

And so the Corps came in to kind of deal with both of those. In addition to that, part of its mission was to deal with wildlife protection and preservation; and navigation were also issues as part of the original system.

At that point, from 1949 or '49, when the project was authorized, it was basically under construction from that point, even into the 70's, and there were actually some parts of the system that were originally envisioned that are yet unconstructed.

Q. How long has the S-9 pump station been there?

A. I believe 1957 is when it was finished construction.

Q. And it's on a levee. What levee is it on?

A. It's actually on the divide point between [85] two levees, L-37 and L-33.

Q. And how long have those levees been there?

A. I believe they were there just the year before, a year prior to the pump station. It was like '56, somewhere in there.

Q. Your expert witness summary suggests that you will testify that: "The operation of the S-9 pump station will not add any detectable pollutants to the waters passing through the pump station." What does that mean?

A. I guess it means that just the pump station in and of itself, and its operation, that doesn't add pollutants from the station.

Q. Do you mean –

A. I won't say any. I wouldn't categorize that – I caveat that by saying any noticeable pollutants. Obviously, everything has some minute effect, but that for the most part, there aren't any oils or greases or things like that that might be a noticeable problem.

Q. So when you would make that kind of testimony, you're talking about actually the station itself –

A. Itself, correct.

Q. – providing pollutants to the water?

[86] A. Right.

Q. You're not going to express an opinion that the water – a legal opinion, or other opinion than that the

water being discharged by the S-9 doesn't add pollutants to the water conservation area?

A. No.

* * *

[87] Q. Mr. Strowd, your expert witness summary indicates: "Mr. Strowd will testify regarding the Corps' Restudy of the C & SF Project and the Critical Project proposed for the pump station."

Is there more that we haven't discussed [88] that would be addressed under that?

A. Yes. I think particularly with regard to the Restudy element. Over the last year, what the Restudy has done that we didn't have last year is they have come up with a conceptual plan, a comprehensive plan, which addresses some of the issues we've talked about associated with the C-11 west basin. And they proposed some facilities to capture, hold, and even divert water from the C-11 basin to another source, another point, a discharge other than S-9.

Whether or not it would remove all S-9 discharge is probably not the case, but it certainly looks to reduce the magnitude and frequency and even duration of S-9 discharges to the conservation areas. And they've got a fairly detailed conceptual plan that lays out new canals, new pumps, new structures, new impoundments that are forced towards dealing with some of the issues we've talked about today.

* * *

[89] Q. What exactly does the conceptual plan the Corps proposed or contemplated do for this basin?

A. I'm going to caveat it as saying exactly, I probably can't tell you every detail without having the maps and documents in front of me, but I can give you a characterization of what it does.

Q. Okay.

A. There is an impoundment which is proposed just east of Highway 27 North of C-11, into which some water would be diverted, as opposed to it being discharged at S-9. This presumably would work in conjunction with the gate we talked about earlier that's on US 27. It would allow that gate to remain closed more frequently and for longer duration, because it would have a place to basically put the water that I mentioned earlier, would tend to fill C-11 up and require us to pump at S-9.

Q. Can I ask you about that aspect of it, and I'll let you go on with the other aspect of it.

[90] A. Sure.

Q. Is that like a lake or an STA. What kind of impoundment are you talking about?

A. It's not a lake, because they wouldn't be excavating down into the ground. It would probably look on the surface like an STA; it would be a levee encircling the area, and water would be pumped into it.

But my understanding of the component is it wasn't designed to function like an STA in the sense that it will allow water to pass through and meet water quality standards upon discharge from the impoundment. It would be simply a storage area. A levee would be constructed on top of the ground, water would be placed into that, allowed to rise up to a depth of 4 feet or maybe more,

and it would hold that water until after a storm event. At which point, it could be released at a lower rate, either for water supply to the C-11 west basin, or it could be diverted to some other use, down a portion of the system I'm going to describe in a little bit.

Q. So the objective is to reduce the amount of water you have to discharge in the conservation area?

A. Right.

[91] Q. Tell me about the other components.

A. The other components, another element that was proposed, was a new conveyance canal which would extend from roughly the North New River Canal; it would extend along, follow the path of US 27. I don't recall whether it was east or west of 27, but this canal would run along the alignment of 27 – and I'm going to switch maps here – all the way down from North New River, past S-9, down to the Miami Canal.

There were a number of real complicated structures that were being added or reconfigured here, which would allow water to go a lot of different directions.

Q. Here being?

A. Here at the intersection of this new canal in 27, and the Miami Canal.

Q. Okay.

A. One of those purposes would be to allow water from this new north-south canal to go across the Miami Canal into a new series of impoundments that are being proposed in the Lake Belt region. These impoundments are somewhat unique, in that they're not a typical impoundment

like I described earlier, a piece of land where a levee is [92] constructed around it and water is allowed to stack on top of the land.

These impoundments would use the excavated hole, in other words, that the Lake Belt or the mining interests are excavating, in addition to building a levee around it. So instead of having an 10-foot deep reservoir, you wind up with a 20-foot deep reservoir by digging down into the earth 10 or 20 feet, and going up 10 feet or so. So you can have a reservoir that might have a 30-foot depth in that area.

And once the capacity of this reservoir impoundment that I discussed earlier was reached, in other words, it was full, then water could be diverted down from C-11 down this new canal into this impoundment in the Lake Belt region.

There were other possible destinations for this water, that the theory here would be there was enough storage capacity to hold the water through the wet season, and then in the dry season, taking that water and providing it for water supply purposes, and so therefore diverting it from conservation area 3.

* * *

[93] Q. Do you have any idea of how long it would be before construction of any of these features was undertaken?

A. No. My understanding of the process which it goes through is that it would have to develop more detailed feasibility studies, and construction plans as a result of that. And there is a schedule, I've forgotten what it is, and so I can't really give you dates. But it's not –

construction won't [94] be initiated once the plan is authorized, there are some other processes that need to be gone through.

Q. Is it fair to say these major features are years into the future?

A. Yes. Yes.

* * *

[96] Q. Has there ever been, to your knowledge, a concern expressed about the effects of pumping itself, other than re-suspension of sediment on water quality?

A. I think one of the issues the report points to is that there was some discussion, or – I won't say theory, that's a little scientific, but I'll use that for lack of a better term – theory that pumping actually moves ground water adjacent to the structure, so that ground water underneath the structure would migrate up and would be discharged into the surface water on the downstream side. And I've heard that there are elements of that in this document.

Q. Does that have ramifications with respect to D.O. or ammonia, or some other constituent?

A. D.O., possibly. I don't know about [97] Ammonia. In the context of the Everglades Agricultural Area, there is chlorides that are an issue, because the ground water there is high in chlorides.

Q. What about S-9?

A. I don't know if there's a chlorides issue. I haven't heard of any issue of chlorides in the ground water in S-9.

Q. You talked about ground water earlier. Correct me if I'm wrong, but ground water sometimes has low dissolved oxygen?

A. That's correct.

Q. So if the S-9 pump station is pulling up ground water, that might contribute to low D.O. in the water being discharged through the S-9?

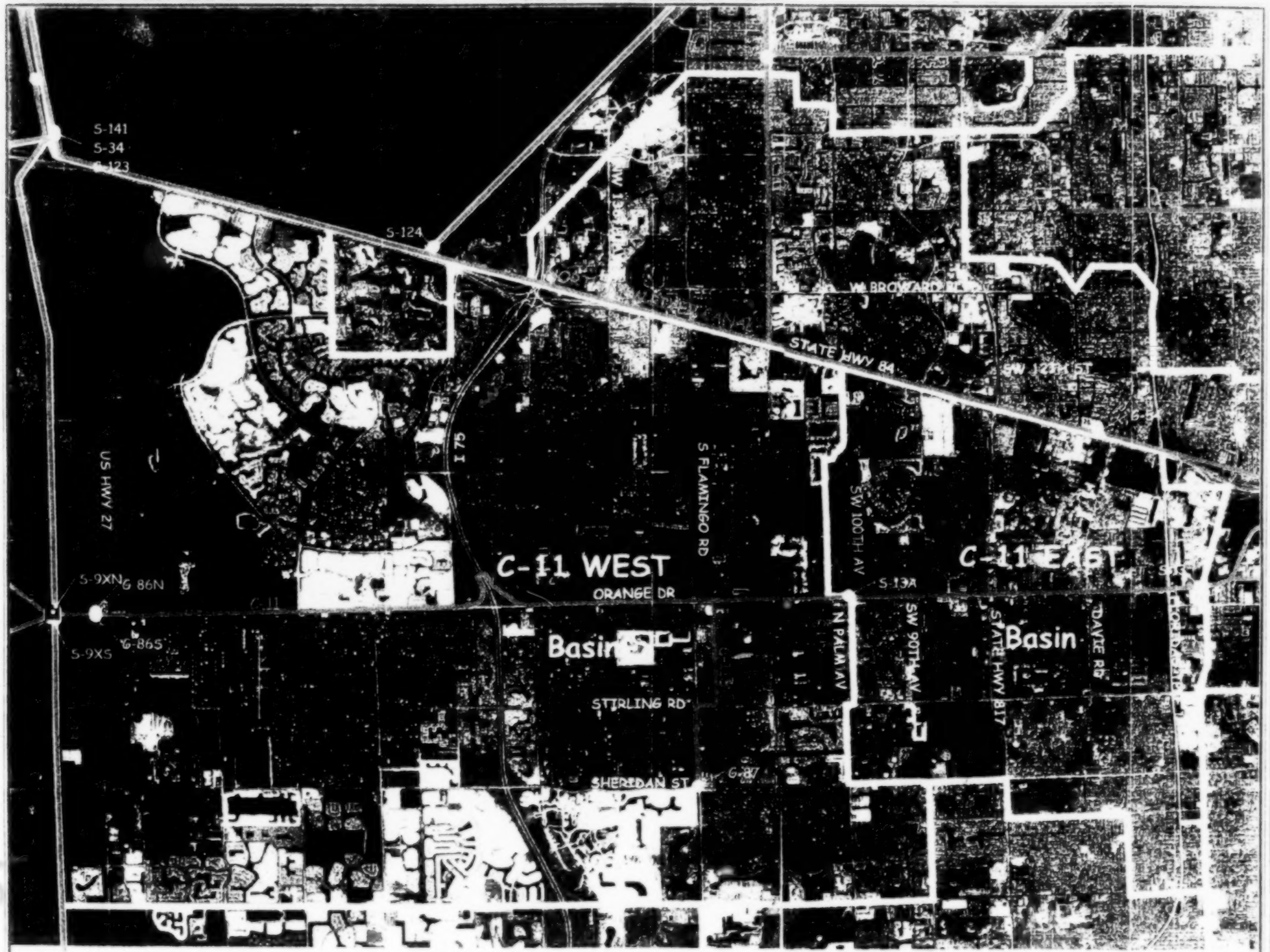
A. That's possible.

Q. You also brought the book Everglades, The Ecosystem and its Restoration, edited by Steven M. Davis and John C. Ogden. How does this contribute to your decision?

A. We mentioned earlier one of the things that my testimony may be directed to discuss would be Historical Everglades. This is probably one of the best volumes that summarizes what the Historical Everglades were, to the best of anyone's [98] understanding, and how the C & SF Project has affected it all through that. So it's a good summary of the existing body of knowledge.

* * *

EXHIBIT #9 (MAP INSIDE BACK COVER)



C- 11 Basin
Broward County
Florida

Legend

- Ft Lauderdale Field Station
- Manned Pump Station
- SFWMD Structure
- SFWMD Canal
- Drainage Basins

South Florida Water Management District

Operations & Maintenance Department

3301 Gun Club Road
West Palm Beach,
Florida 33406

PLAINTIFF'S EXHIBIT
#110

BEST AVAILABLE COPY

Exhibit 11
Deposition of Tommy Strowd
December 14, 1998

Pages i, 1, 2, 48, 70, 71, 74, 75

TECHNICAL MEMORANDUM

AN ATLAS OF EASTERN BROWARD COUNTY SURFACE WATER MANAGEMENT BASINS

By

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EXECUTIVE SUMMARY

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The surface water management basins of eastern Broward County, Florida, were first delineated in the 1950's by the COE in their *General Design Memorandum* (GDM) for the Central and Southern Florida Flood Control Project (Project). Based on the hydrology of the basins, the COE designed and constructed a system of canals, levees and control structures to provide flood protection for southern and central Florida. The Project is dynamic with new works being constructed and old ones being modified to meet the changing needs of southern Florida.

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The Project canals in Broward County serve a variety of functions. The primary function of all the canals is to provide flood protection for the basins in which they occur. Secondary uses of the canals include land drainage for agriculture and urban or residential development, and regulation of groundwater table elevations to prevent saltwater intrusion into local groundwater. Many of the canals are used to supply water for irrigation and to recharge the wellfields of local municipalities. Three canals, the Hillsboro Canal, C-14, and the North New River Canal, are used to discharge excess water from the Water Conservation Areas to tidewater.

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INTRODUCTION

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The Project is dynamic. As the population in South Florida has grown, and as land use and water demands have changed, the Project has evolved in response to these changes. Some parts of the original Project were never built, other parts have been rebuilt or modified, and as the need has arisen, new structures have been designed and constructed. In some cases, the basins themselves have been redefined. As the COE can not always participate in construction of new works, the District has occasionally assumed responsibility for the design and construction of additions or modifications to the Project.

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Using the Basin Descriptions

Surface water management basins (hereafter drainage basins) in Broward County are identified by the same

designations as the major Project canal located in that basin.

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C-11 (SOUTH NEW RIVER CANAL) BASIN

Description of the Basin

The C-11 basin has an area of approximately 104 square miles and is located in south central Broward County. The C-11 basin is divided into a western basin (81 square miles, . . .) and an eastern basin (23 square miles . . .)

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APPENDIX 1 - BASIC CONCEPTS

Runoff and Drainage – Several things can happen to rain after it falls to earth. At the beginning of a rain event, the rain will most likely seep into, or "infiltrate", the soil. As soil becomes saturated, however, the rain will tend to pool on the surface of the ground in puddles or ponds. These detention areas have only a limited storage volume, and when their capacity is exceeded, the excess water will flow downhill to the nearest stream or canal. That part of the rainfall that "runs off" of the soil surface to enter local streams is termed "surface runoff". Of the water that is detained on the surface, some will evaporate and the balance will eventually seep into the ground.

Water seeping into the ground enters a reservoir of subsurface water known as groundwater. Since, in south Florida, many soils are very sandy and underlying rock strata tend to be very porous, water flows easily between

surface water and groundwater. The surface of the groundwater is known as the "water table". When the water table level is higher than local surface water levels, water will enter the surface water from groundwater. When the water table is lower than the local surface water level, flow is from surface water to groundwater. In general, groundwater supplements stream flow during periods of low rainfall, and surface water recharges groundwater storage during periods of high rainfall. Although subsurface flow from groundwater to surface water is important to the long term supply of water to a canal or stream (it is sometimes referred to as "base flow"), it does not make significant contributions, if at all, to streamflow during storm events with high rainfall.

In the context of these basin descriptions, the term drainage is used to refer to the total surface and subsurface flows entering a canal from its drainage basin. It may be useful to keep in mind, however, that during a rain event (especially one severe enough to cause flooding), it is surface runoff that is the important contributor to this flow, and at times between rain events, subsurface flow from groundwater to surface water is most important.

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Control Structures – The structures referred to in the basin descriptions are devices (e.g., weirs, spillways, and culverts) placed in the canals to control water surface elevations (stage divide), amount of flow (stage divide or water supply structure), or direction of flow (divide structure) in the canals. A structure may have more than one function. In general,, a stage divide controls water surface elevation upstream of the structure, and it controls water flow (or discharge) downstream of the structure. A divide

structure is usually located at or near a basin boundary. It prevents water in one basin from entering the other basin. A water supply structure is also usually located near a basin boundary. It is used to pass water from one canal to another (i.e., from one basin to another).

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APPENDIX 2 – GLOSSARY

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Terms

Water Conservation Areas

The five Water Conservation Areas (WCAs 1, 2A, 2B, 3A and 3B) are located in western Broward and Dade Counties and in central Palm Beach County. WCAs 2A, 2B, 3A, and 3B border on basins described in this publication (Figure 1). The WCAs are remnants of the original everglades in South Florida. Water is impounded in the WCAs by Project levees, and water flow into and out of the WCAs is regulated by various Project control structures. The WCAs are managed to store water and to provide viable wetlands habitat. Water is stored in the WCAs according to a set of regulation schedules, one for each WCA. A regulation schedule specifies the level of water to be held in the WCA at any time during the year. When the water level in a WCA exceeds its schedule, water is released from the WCA through the structures on its periphery. These are called regulatory releases. If the water level in the WCA is below the regulation schedule, releases from the WCA are restricted. During periods of low natural

flow, water stored in the WCAs can be supplied to basins in Broward County.

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Deposition of Ronald Jones
December 16, 1998

* * *

[18] A. The C11 basin was an area that had a long hydro period.

Q. What do you mean by a long hydro period?

A. The water was on the ground, you know, 350, 360 days a year. It dried out seldom, historically.

Q. So, it's what we would characterize as historically a very wet area?

A. Yes.

* * *

[19] Q. So, the area on the S-9 would be the area where the water would start to go maybe from south to southwest as it curls into the southern regions?

A. If you look at what people have assumed to be historic maps, you know, because there's a lot of it, that's – I don't know how much reliability you can place in some of the stuff, but certainly that would be the indication that would be the area where you are flowing pretty well south or it was flowing – starting to turn to the southwest.

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[29] A. No, not particularly. I think everybody in that group just assumed that everybody understood that there was a water quality problem associated with water being back pumped into the Everglades.

The water on one side, suburban, urban, agriculture, Davie dump, ranches, horses, you name it in there, and

the water is highly contaminated with those types of activities, and the water on the other side is Class III Everglades water, which virtually has nothing in it.

Q. Everything you named just now is part of the activities that are located in the C11 basin?

A. That's correct.

Q. Among those you said, agriculture, horse, residential, urban and a landfill?

A. Amongst a few. Nurseries. They used to burn refuse out there. There's a prison.

Q. Have you done any studies that would [30] indicate the influence that the pump station itself has on the water that runs through the pumps?

A. The pump station on water that goes through the pumps? The pump station is just moving the water in sort of an unnatural direction, back into the Everglades.

Q. But do you know if the operation of the pump station is adding any pollutants or other chemicals to the water it's conveying?

MS. CARROLL: Objection, form.

THE WITNESS: It could be adding oil or diesel, but I have no idea whether it's – I mean, whether, you know, any of the typical things that would occur from running the diesel engines and the pumps would be – being added to that or not. That's never been the issue we've ever discussed.

BY MS. SOLE-CALAS:

Q. The issues that you have discussed and been concerned with, are the land uses and their contributions to the water, and to the C11 canal. Is that correct?

A. The issues we've discussed, is the water on one side of the levee the same as the [31] water on the other side of the levee, and the answer has always been no, and we have to find some way to keep the water that's highly polluted from entering waters that aren't polluted.

* * *

Q. You're talking that the water that is now going through the S-9 pump station, into the water conservation area, contains pollutants. Correct?

A. Correct.

Q. Those pollutants, did those enter the water upstream of the – I'm sorry. Let me rephrase that.

Did those pollutants enter the water before reaching the S-9 pump station?

[32] MS. CARROLL: Objection, form.

BY MS. SOLE-CALAS:

Q. Did you understand my question?

A. Yes, I think so. The pollutants originate in the C11 basin. That's about the best I can answer that.

* * *

[34] Q. You mentioned you could see the ground water seeping under the levee, you said?

A. When the pumps are on and they've drawn down the canal, you can see the water coming out of the levee and into the seepage canal.

* * *

Q. Have you done any studies involving ground water and its effects in the Everglades?

A. We have a problem when we talk about ground water in the Everglades. Ground and surface waters are essentially the same thing.

So, it's unconfined. It's hard to say that, because you go to one place where the Everglades are dry, and then you go two kilometers downstream and they're wet again, and the water is flowing. So, it was ground water that came to the surface there, and it's an [35] unconfined aquifer, from the standpoint of a surface confinement or surficial aquifer, if you will. So, it's hard to decide what is ground water and what's not, what's not ground water.

We do collect samples from wells put down into the lime rock. We do collect samples placed into the peat layer to look at interstitial water quality, and both of those by definition would be considered to be ground water, but I am not a subsurface, you know, hydrologist or a particular water thing. We just have to look at those parameters, because they are intimately connected with the surface waters.

Q. In your experience dealing with, I guess, what we just talked about, it seems that ground water flows constantly into surface water and then surface water into ground water, depending on the water table. Is that correct?

A. Depending upon the slope of the land, where the water table is and where the land is, you know, you're developing a – some sort of a hydrostatic head that forces water to move in one direction or another.

Q. When you are talking about hydrostatic [36] head, is that what exists at the S-9 pump station with the water elevation higher in the water conservation area than in the basin?

A. Right. Or the other way around.

Q. When water is higher in the basin than the water conservation area, it can then seep into the water conservation area?

A. I don't know it's ever occurred, but it's physically the way it works.

Q. When you did your study specifically in the mountains, I think you said, of Washington State – is that correct?

A. Yes.

Q. Did those studies include any analysis of ground water movement there?

A. I think the rock is pretty – pretty dense there. There's not a whole lot of ground water moving through, you know, basalt or some of the other types of rock we have at that point. No. It's pretty solid.

Q. So, basically, it would be very different geological conditions and hydrology than what you see in the S-9 basin?

[37] A. Yes, I mean, let's face it. We're talking about an ice melt mountain lake, you know, and that's hard to compare with the Everglades.

That's the problem most people make, is they assume wherever they were is like the Everglades, and when they come down here they try to apply the same theories and ideas, and they're generally wrong.

Q. So, in the C11 basin – I guess the C11 canal and the C11 basin are hydrologically connected with the water conservation area in the sense that ground water can flow back and forth?

A. Well, I wouldn't go as far as to say – you see, you used the word "could," and I would use that word very, very – could, you know, big time, because it's not flowing back and forth. It's basically flowing from the west to the east. And there would be, I guess, conditions where we could be flooded in that area and the water level would be higher in the C11 basin than it is in the conservation area.

* * *

[38] Q. What I'm saying is, it's different than the mountain where you have, I think you said, granite and basalt."

A. I think it's – there the water flows surficially, and here the water flows surficially and through the ground water. We have a much more porous type of situation. That doesn't mean there's not a direction in which it flows predominantly, and what exists out there now and what existed out there in 1800 are two different things.

Right now we give flood protection to the people living in the C11 basin, which means the water levels are maintained

at a low head, if you will, so the conservation is generally always higher. I don't know of any situation where it's not been higher than the basin. That's why we have the pump there.

* * *

[40] Q. Do you know if the C11 canal is cut into what would be the ground water table?

A. Yes, it is.

Q. So, the C11 canal would normally contain ground water. Is that correct?

A. The amount that gets into the C11 canal, it contains surface water.

Q. It becomes surface water?

A. Yes. There's a lot of tributaries going into it which contain surface water, which feed surface water into the canal.

* * *

[44] Q. With S-9, what is it that you were looking for, or what was you involvement specifically with the critical project?

A. Originally, the critical project was to [45] look at the design and development of periphyton technology to clean up the water at the S-9. It got changed into a monitoring and BMP, you know, plan, if you will.

* * *

[50] Q. What was the basis for thinking that the PSTA would be the solution for the problems from the C11 basin?

A. Because of the relatively low concentrations of phosphorus and other nutrients in the water of the C11 canal. Relatively low. They're not 200 parts per billion, like they are coming out of the EAA.

The fact that there are areas that have very, very shallow depths of soil out near the S-9 pump, which could leave – they could be cleared off, which would leave them very susceptible for the technology.

[51] Q. What were the ranges of the phosphorus concentrations in the C11 canal at this time?

A. I think it's – it goes from like 20 to a hundred, you know, maybe a little less than 20 to over a hundred. That's the ranges I've seen in the Bill Walker's report.

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[61] Q. Do you know what plans the restudy has for the S-9?

A. I think the restudy assumes that the S-9 is going to be delivering clean water.

* * *

Q. Have you developed any opinions as to the water quality from the C11 basin, if it's changed, let's say, in the last five or ten years?

A. Other than from the Walker report, which indicates that it's getting worse, I don't [62] know of anything that – I haven't seen anything. I haven't developed any – I haven't used any data to try and look at a trend analysis or whatever.

Again, my point is, it's not good enough to be put into the Everglades. I don't care whether it's going up.

Q. Have you done any analysis on the different areas of the C11 basin and their contributions to the water quality problems?

A. Those studies I believe are what are taking place or supposed to be taking place now as part of the monitoring effort, which I think is a noble effort, to provide useful information, and it's going to demonstrate they need to do something to clean up the area, and I don't know why we're not figuring out how to clean up this stuff. We already know there's a problem.

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[64] A. All of the indications are, Bill [65] Walker's paper, all of the studies, everything you can possibly imagine, with the restudy, the way water is going to be directed, only indicates the water quality is going to get worse.

Q. What is going to make the water quality worse?

A. The seepage water will become a smaller and smaller component because of the buffers, and so the water that gets back pumped will have less component, less proportion of seepage water, which is the water coming out of the Everglades, which is relatively clean.

As that component goes down, the proportion of the water that is coming from the basin is going to go up, and there's really very little you can do to make that water – there are ways you can limit or, if you will, mitigate additional inputs of phosphorus and pesticides and whatever into that area, but there's very little you can do to correct the problem that's already there.

The Davie landfill, for instance, is a major contributor to pollution in that area and, basically, all they can do is pump the water off there and haul it to a sewage treatment facility.

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[66] A. There's water that's got a higher level of pollution in it, and there's water that has a lower level, and they're being mixed. When the water from the Everglades seepage gets taken out, there's every reason to expect the concentrations of material will go up.

Q. What, if any, efforts are taken to combat the sources of pollution that exists in the basin?

A. If anybody can demonstrate to me or find any place in the world where BMP has reduced the phosphorus concentration, we will just stick with phosphorus in this thing, where BMP has reduced the phosphorus concentration to the level where it can go into an oligotrophic system like [67] the Everglades, I would love to see it, because I think that would be tremendous, but I can tell you, you can search the literature, have all your experts search the literature, have all your experts, have the whole State of Florida search the literature, you will not find a place where BMPs has that effect. They are effective. Don't get me wrong. I think it's a tremendous thing to be done, but it's not going to be enough. That's all there is to it, and it's there's pretty good models for how limited it's going to be.

Q. I want to clarify part of your answer. When you say BMPs alone at the sources will not be enough, do you mean it will not be enough to reduce the concentration of phosphorus in the water to 10 parts per billion?

A. It will not be enough to reduce the concentration of phosphorus to concentrations that won't cause imbalances and violate the Class III water standards in the Everglades. Whether that number is 10 parts per billion or 8 to 13 parts per billion is, you know – I don't think that's going to occur with BMPs.

* * *

[70] Q. Pesticides, you mentioned. Is pesticides a problem in the water coming from the C11 basin?

A. Yes. We have a number of hits, you know, of pesticides, both in the sediments and in the water.

It's a matter of definition. A lot of times the law states that none shall be detected. [71] I don't know whether that's – we could argue for days on whether that's overly protective or not, but the fact is, that some is being detected, so there are violations.

Q. The source of those pesticides would be what?

A. It's unknown, but the pesticides are generally a big problem in suburban-urban habitats, more than they are in ag. You can regulate them in ag and see what's going on. I'm not going to say ag is not a responsible party out there, but I'm pointing out it's much more difficult to regulate the yard owner, the homeowner, who decides to put twice as much diazinon on his yard or twice as much atroscine on, does it three times instead of twice a year, and doesn't read the directions that says don't spread it more than a hundred feet from any surface. It's hard to regulate them, so we tend to have more problems with that.

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[73] THE WTINESS: The operations of the pump, resuspending sediments off the bottom and bringing that in, certainly can deliver heavy metals and pesticides a lot more.

* * *

[74] Q. What materials would attach themselves to these sediments, again?

A. Almost all of the pesticides and herbicides in common use have an affinity for sediment, if you will, organic matter, particularly, and most of the heavy metals, most of the metals, period, do also.

Q. Would phosphorus?

[75] A. Yes. Phosphorus is generally in higher concentrations in the sediment than it is in the water column.

* * *

[80] Q. What do you mean by two different masses of water?

A. It means the water is different on one side of the pump station than it is on the other, and the Everglades water has another pH. It's a [81] characteristic that shows they're different bodies of water.

* * *

[83] A. Specifically at the S-9, I don't know whether phosphorus is still the limiting factor. It certainly is, as you go further out away from the S-9, but the areas immediately surrounding the S-9, actually quite a distance surrounding the S-9 pump in the water conservation area, is very, very highly polluted.

The phosphorus concentrations are at their maximum levels. They can't get any higher than they are.

* * *

[85] A. In the Everglades, on the whole, phosphorus is the nutrient which is in limitation. In other words, it's what keeps the organisms from growing or from metabolizing, and if you add additional phosphorus, they can grow more, and they can metabolize more, until they have enough phosphorus, and then whatever the second most limiting component is, which is generally nitrogen, although that may not be the case in the Everglades, then it becomes limiting until it gets to a high enough concentration that the third most, and it keeps on going on and on and on and on, until finally you run out of things the organisms need.

* * *

[89] Q. If you haven't had any flow in the C11 canal, and what you have is seepage coming from the water conservation area, and you take a sample on the east side of the pump station, and you take a sample from the west side of the pump station, in the water conservation area –

A. They could be the same under those circumstances. The problem is not that. The problem is whenever you turn the pump on, it mixes the water back up again.

It's not that there's not seepage water coming through that has essentially the same characteristics as the water in the – in Water Conservation Area 3A. It's the operation of the pump which mixes the water, the two different masses of water, back again, and puts water that shouldn't be going into the Everglades, there.

Q. You keep referring to it as two different water bodies, but one can contain water from the other, in fact?

A. Proportionally, I think we described the proportional portion of that, and that the issue is not – if this was a seepage return pump and all it was doing was returning seepage, we wouldn't be here, because there wouldn't be any [90] damage in the conservation area.

Q. Because the things that are causing the damage are the things that are coming from the basin? The pollution that's causing the damage is the pollution that's coming from the basin?

A. It originates in the basin, yes.

Q. Back to dissolved oxygen. Is that – is the level of dissolved oxygen that's being transferred from the C11 canal to the water conservation area, is that an element of concern?

A. No, not in my mind. The problem is that – what I see as a concern is that the phosphorus or the limiting nutrient, when you put these nutrients into the marsh, into the Everglades side, Water Conservation Area 3A side, that that causes an increase in metabolism, which causes a decrease in dissolved oxygen.

Q. The problem is the nutrient, not the dissolved oxygen concentrate of the water being absorbed by the S-9 pump?

A. The dissolved oxygen content just indicates different masses of water, different characteristics. It's another characteristic of that.

Q. When reading your expert witness [91] summary, one of the things in here is that you say the current operation of the S-9 harms the Everglades system by adding pollutants at the point of the S-9.

Can you define for me the operation that you are talking about, that harms the Everglades?

A. Sure. The back pumping of water under the current scenario, where there's a component of that water that is not just seepage. It's water originating in the C11 basin, that is – that contains elevated levels of, you know, phosphorus and nitrogen and pesticides and whatever else happens to be in there, Christmas trees, about this time of year. There will be a tremendous number of those floating down the canal.

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[92] Q. Is there a difference in specific conductance between the C11 canal water and the water in the water conservation area?

A. Yes, there is.

Q. What's the difference?

A. The C11 canal water has a higher specific conductance, has more salts dissolved in it, than the conservation area.

Q. Is that a problem, putting higher specific conductance?

[93] A. It can be, particularly if it contains – sulfate or potassium are components of the specific conductance, if you will, or the – because those can cause alterations in the cycling of things like mercury and oxygen.

* * *

[97] Q. In looking at that, actually, do you know if the C11 canal is a water of the United States?

A. I can't see why it wouldn't be.

Q. And water conservation areas?

A. Certainly, the water conservation areas certainly are. They're both navigable waters.

* * *

[101] Q. What is your definition of a point source?

A. If you've got an end of a pipe that's discharging, I would consider that a point source, unless it's simply moving – moving identical waters from one place to another. Then it's just a transportation.

You have to be a source of something. If there's no difference between the water on one side of a structure and water on the other side of a structure, it's not a point anything, other than just a place where the water is being accelerated or perhaps moved in the opposite direction to natural flow.

Q. So, your definition has two compartments. If it's either a source of something, or it changes the flow of the water. Is that correct?

MS. CARROLL: Objection.

THE WITNESS: Not necessarily the flow of the water. I didn't say that.

I said if it changed the flow of the water, that doesn't necessarily make it a point source. Okay?

I said what made the difference is the quality of the water on the sides of the [102] structure. If one was adding something into – you could be a source of clean water and into a source of dirty water, and still be a point source. A point of source of different water.

BY MS. SOLE-CALAS:

Q. If this – let's call it a structure. If a structure moves exactly the same water from one side of the structure to another side of the structure, you are saying it's not a point source. Is that correct?

A. Yes. Just moving water or allowing water to pass.

Q. If the structure, though, adds something to the water from one side of the structure to the other side of the structure, then it's a point source?

A. You have that a little too defined to the structure. I didn't say that. I said if the structure points water of a different quality from one side to the other side, or moves it from one side to the other side, then it is a point source.

* * *

[103] Q. Do you think that the S-9 pump station is a point source?

A. Oh, yes. No doubt about it. It requires and NPDES permit.

Q. Can you tell me why the S-9 meets your definition of a point source?

A. Because it is pumping different waters. Not only different waters with different characteristics, but water against its natural [104] flow pattern. And it's a point. You

can go to the discharge point of the pump. You can go to the intake point of the pump. It meets every characteristic that I know of, of a point source.

Q. You said it's moving different water?

A. Right. The water quality, the water characteristics of the water in the C11 basin are not the same. It's different water than the water in the conservation area.

Q. The pump station itself is not transforming or changing the water quality of the water that's going through it?

A. Other than the point we pointed out about the sediments, resuspension of the sediments, and thereby the turbulent mixing that's in the pump itself would tend to cause increases, but no data on that. I don't think that's the issue, though. The pump station changing the water isn't –

Q. That's my question.

A. No. I do not believe the pump station itself. We talked about the oil, the – whatever it is, and you know, those metals that would be coming off of the pipes, or whatever that we have, but I mean it's not changing the water [105] itself. It's just pumping water that's different characteristic.

Q. What do you base your definition of point source on?

A. I don't –

MS. CARROLL: Objection, form.

BY MS. SOLE-CALAS:

Q. Do you understand the question?

A. Yes, I understand the question. I don't know how to go – I've read – I've read all the documents, you know. I've been dealing with this stuff for a long, long time.

Q. But what in particular?

A. NPDES documents, 401 permitting documents, Clean Water Act.

I worked for EPA for too many years not to have absorbed some of this stuff. So, I mean – but I can't put my finger on what it is. It's just general knowledge. I probably could go into my files and pull out any of those acts or regulations and look at the definitions of point sources, but – principally, you know, the point source is from – is moving water in an unnatural direction and it's moving water of a different characteristic, different quality, different [106] characteristic.

Q. When you say it's moving water in an unnatural direction, what do you mean by that?

A. The water is supposed to be going from west to east and the pump station, S-9, pumps from east to west.

Q. Why is it supposed to be going in that direction?

A. That's the natural gradient.

Q. After the canal was put in?

A. Sure.

Q. That's not the natural gradient without the structure?

A. There wouldn't be structures there. God didn't create the design or put the levees in there.

Look at the water going in the area. The water would have been moving towards – tide to the coast. It's higher in the Everglades. The water is always moving towards the coast and moving south down the system. But there's movement of water west to east naturally. There's movement of water now west to east. The pump station back pumps. You don't need to back pump if you are going in the natural direction. [107] The whole purpose of that is discharge, is returns, back pump. That's what it's doing.

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A. You mean if there was no back pumping allowed, what would happen to the water levels in the conservation area?

Q. Yes.

A. You would get your pants sued off by the people living in the basin, but I guess the water levels would decrease in the conservation area.

You would get your pants sued off by the people living there, because there would be flooding in the C11 basin.

* * *

[108] Q. The source of the pollutants in this case, are the land uses and the activities in the C11 basin?

[109] A. The source is the water that's in the C11 basin, and the land uses are what, I guess, contributes – puts the pollutants in it.

* * *

[113] Q. But when you say that you are going to address the district's regulatory methods, what testimony do you anticipate regarding the district's regulatory methods?

A. Do you have any for that structure? The lack of regulation of anything to do with the [114] S-9 pump.

Q. So, your testimony is not going to be talking about the district's regulatory authority and permitting?

A. No, no.

Q. The permits it issues?

A. No. I don't do that. Just the fact that there doesn't appear to be any.

Q. I want to understand what you mean by these regulatory methods that the district has. Are you talking about –

A. For instance, there are Class III violations in this area, imbalances of flora and fauna. People have admitted that. They go out there and see it. Fine and dandy. But there's no action taking place to eliminate that.

Q. So, the approach that's being taken, for example, under the regulatory action strategy, which is to find the upstream contributors and clamp down on them, in your opinion isn't sufficient?

A. Yes, definitely.

Q. Are you familiar with that strategy?

A. I am very familiar with that strategy that has been presented to me now, which is BMPs [115] and some additional pumping practices or maybe some gates on the

culverts or water management. It's going to be inadequate, period.

It hasn't worked anywhere else to that extent. I wish it would. I wish it could, because it would be really inexpensive for us to solve our water quality problems in South Florida.

* * *

[117] A. Cattails are not going to be present if there's not elevated phosphorus. No phosphorus pollution, no cattail, no matter what the water level.

Q. You seem a little upset about this point. Is this a point you discussed earlier? What are your sentiments on this?

A. It's just the fact of the matter. You don't have cattails in places where you don't have elevated levels of phosphorus, period.

* * *

[119] Q. If the S-9 pump station is not pumping water into the water conservation area anymore, would this area dry out?

A. I doubt it.

Q. What would happen?

A. It would have less water in it and the C11 basin would flood.

* * *

[121] Q. I remember discussions about if there's not enough water coming to the park, we're going to have great changes in the flora, and we're not going to have bird

communities, et cetera, and those were some of the concerns I've heard, with lack of water.

I'm wondering if those same concerns would exist in the water conservation area?

A. I won that argument very early. I told them not to fix the problem with dirty water. The Everglades have been going through droughts [122] and floods for thousands of years, and they can handle that very, very well. The communities change and they respond, and the birds move in and the birds move out.

Certainly we've caused a lot of damage by shrinking the size of the Everglades and we do have hydrology as a major – the characteristic of what makes a wetland a wetland, but the system has quite a resilience to droughts and fires and frosts and those types of things.

It has very, very little resilience or resistance to phosphorus, because phosphorus is – has held on so tightly to the system that it affects it literally for hundreds of years, maybe thousands of years.

* * *

[136] Q. We've used the term, "back pumping." What is that, just for the record?

A. Water that's come out of the Everglades, or water that – it's kind of interesting.

Definitely, you would think of back pumping, the source of the water would be the Everglades, and then you take that water and put it back into the system, but it's often used as – for rainfall or water that would have been into the system and it's put back into the [137] Everglades, you know, so there's kind of a mixed use, and I don't know – without

going through each individual document and seeing how they use the term, you can – you have to temper it with that. Seepage water coming out, being back pumped, versus water that would have gone into the system being back pumped, are two different things.

Q. You said water that would have gone into the system, you mean water that would have been part of the Everglades system, that there was no canal or levee, the water would have been part of the Everglades system?

A. That's correct.

* * *

Deposition of Samuel Eugene Poole
December 22, 1998

* * *

[39] Q. Are you familiar with the S-9 pump station?

A. Yes.

Q. It is a Water Management District structure; is that correct?

A. I don't know who has title to the structure. I believe that it is one that we hold title to, but I can't tell you.

Q. You operate and maintain it; is that [40] correct?

A. Yes.

Q. And it discharges into water conservation area 3-A; is that correct?

A. Yes.

* * *

[44] A. Well, the critical projects are moving very, very slowly. And in particular, the federal funding that we had been asking for has not been received. The required project cooperation agreements have been slow to be executed. In fact, I'm not sure that any have been executed to date. But the critical projects from the federal funding point of view have not been moving along as fast as we would like.

* * *

[58] Q. Now, the Water Management District is involved in Everglades restoration; is that correct?

A. Yes.

Q. And would it be fair to say that water conservation area 3-A is part of the Everglades; is that correct?

MR. MACLAUGHLIN: I'm going to object to [59] the form of the question. It's not really a question, it's a statement.

THE WITNESS: I'm not sure. You could treat it in a number of ways. Clearly it was part of the Everglades, and it operates as a part of the South Florida environmental system, and it's probably the best example of what the Everglades used to be pre-drainage, probably a better example than Everglades National Park.

BY MS. CARROLL:

Q. And it's part of the Everglades Protection Area; is that right?

A. Yes.

Q. So would it be fair to say that it is one of the responsibilities of the Water Management District to protect and preserve that kind of Everglades Protection Area like the water conservation area 3-A that I discussed?

MR. MACLAUGHLIN: Let me object. It seems to be asking for some sort of legal conclusion.

THE WITNESS: I was going to say that it's 373 that gives us our responsibilities, and 373 says that we are supposed to balance the four elements of water supply, flood protection, [60] water quality, and environmental protection and enhancement. So the job of this agency is to balance all four of those interests. Part of the area that we

operate in is water conservation area 3-A, and we are attempting to balance those interests.

* * *

Q. The Water Management District is obligated to comply with the requirements of the Clean Water Act though, right?

A. Certainly.

* * *

[84] Q. Are you aware that previously planned or projected regional treatment facilities for the area around the S-9 are no longer being pursued by the District?

* * *

A. One of the problems that we have witnessed is that when you have the pumps operating at full capacity, it entrains a lot of sediment, and that sediment carries with it a high phosphorus load.

* * *

[87] Q. Have you been out to the C-11 canal?

A. Yes.

Q. If you step back and look at it, is it something that's obviously a canal; does it have distinct boundaries and that sort of thing?

A. Sure, yes.

Q. And is there pollution in that canal?

* * *

THE WITNESS: That canal is in an area that used to be Everglades, and is no longer. I don't know what the background water quality was. No water quality measurements were made in that area before it was destroyed, so I don't know what the background would be.

[88] And I think probably the relevant part of your question is that when the water from that canal goes into the Everglades, we know that the water has more phosphorus in it than water out in the Everglades itself.

* * *

DEPOSITION OF RICHARD DREW
December 23, 1998

* * *

[10] A. I am bureau chief, Bureau of Water Facilities Regulation, Division of Water Facilities, Department of Environmental Protection, located in Tallahassee, Florida.

* * *

[17] Q. Are you aware there is case law where waters of the United States to waters of the United States has resulted in a requirement of an NPDES permit?

A. This morning. I heard about that one particular case.

* * *

[19] Q. Are you familiar with the S9 pump station?

A. No.

Q. You are having to talk to me in isolation about the fact?

A. That's why I say site specific circumstances. I would have to look at the individual site. Early on you asked me what I would look at.

Q. Have you ever been to the S9 pump station?

A. No.

Q. Ever been to the C11 West Basin?

A. I probably have flown over it.

Q. You don't recall it specifically?

A. No.

Q. Florida Conservation Area 3A, have you ever been there?

A. Not that I remember.

* * *

[36] Q. Have you ever testified under oath in a court or some other hearing on the issue of whether a facility or structure should have an NPDES permit?

A. No, I have not.

* * *

[43] Q. The Stormwater Treatment Areas, most of them are being required to have NPDES permits; is that correct?

A. Yes.

* * *

[44] Q. So what are the pollutants that are being added?

A. I don't think there are any.

Q. So in your opinion –

A. I wouldn't permit them – would not.

Q. But EPA is requiring that they be permitted?

A. They sure are.

* * *

[48] Q. Were you around when the decision was made, were you involved in that decision making process on the STAs, whether or not they should have NPDES permits?

A. No, I work for DEP.

Q. Right, but my understanding from my discussions with you is that DEP and EPA had many discussions on this topic; is that correct?

A. Uh-hum.

Q. Were you involved in any of those discussions?

A. Yes, I was.

[49] Q. And it's fair to say you disagreed pretty strongly with EPA?

A. Yes, I did.

* * *

[67] Q. Okay. Typically how long does it take to process a permit application once application is made for an NPDES permit?

A. One would hope six months. We ask an application be provided – we ask for an application to be provided for renewal six months prior to the expiration date, with the target in mind that we would issue a permit prior to the six months time frame, it goes away.

We have certain notice requirements and things like that that have to be met. And for a new facility – and the reason I hesitate – for a new facility that comes in, there may be certain questions that have to be answered under a request for information.

That may take a while longer to do. For instance, the development of a water quality based effluent limit may require mathematical modeling, may require seasonal sampling, it could take anywhere from [68] one to two

years just for the facility to get the baseline information they need to file a complete application.

So we would deem it incomplete, which would freeze it until we receive the additional information from the consultant.

The consultant comes back with the information, we look at it, we run the model, we say you are using these types of coefficients, you shouldn't have, and go back and do it.

So it becomes a little – for newer facilities, it's a little difficult, or expansion of existing facilities because there are unknown, not because the department is sitting on a permit and taking a long time processing it, it's just to have a complete application, have all the information necessary to make a decision, may take a longer period of time from the very first time an application comes in the door.

If all the information is complete as it comes in the door, then I don't see any reason why the permit wouldn't be out in six months or even before that. General permits can be out in a matter of a couple of weeks.

Q. So –

[69] A. I am sorry to give you a long answer, but it was a complicated one to answer.

Q. Sure. So when you say – if you have all the information available up front, you mean like sufficient monitoring done and all the factual information about the facility in question?

A. Characterize the effluent, what the impacts are to the environment, whether it's protected for the designated use, all the information necessary for us to make decisions and write effluent limitations on there, on the permit. They may have given us everything we want except they don't tell us where they are going to dispose of the residuals, which is another way of saying municipal sludge.

We have to know where they are going to dispose of it. So that type of information. All that information has to be in there. These permits can be very complex.

* * *

PLAINTIFF MICCOSUKEE TRIBE'S MOTION AND INCORPORATED MEMORANDUM OF LAW FOR SUMMARY JUDGMENT ON ALL COUNTS OF TRIBE'S COMPLAINT

January 4, 1999

* * *

A. FACTS AS TO WHICH THERE IS NO DISPUTE.

* * *

9. The S-9 is owned operated and maintained by the South Florida Water Management District. Affidavit of Truman Eugene Duncan at 2.

10. The S-9 is located in Broward County. Affidavit of Truman Eugene Duncan at 2.

11. The SFWMD is one of 5 water management districts in the State of Florida. Affidavit of Truman Eugene Duncan at 2.

12. Samuel Poole is the executive director of the SFWMD. Poole Depo at 6 (SFWMD employee).

13. Water from the C-11 Basin that is being discharged through the S-9 pump travels down the L-67 canal that has a direct connection to Everglades National Park. Affidavit of Bradley Waller at 2.

14. Everglades National Park is a 1.5 million acre International Biosphere Preserve, a World Heritage site and a wetland of international significance that is home to numerous threatened and endangered species. Affidavit of Truman Eugene Duncan at 2.

15. The Army Corps of Engineers has been authorized by Congress to construct the Modified Water Deliveries project to restore water to Everglades National Park through northeastern Shark River Slough. Affidavit of Truman Eugene Duncan at 2.

16. The project will involve creating gaps in the L-67 levee between WCA 3A and WCA 3B, thus opening up relatively pristine WCA 3B and Everglades National Park to polluted water from the S-9 pump. Affidavit of Truman Eugene Duncan at 2.

17. The C-11 West Basin is the subject of a Critical Restoration Project, of which the S-9 is a part. *See* Trost depo at 15-16 and 77 (SFWMD employee/witness); *see* Strowd depo at 63 (SFWMD employee/witness). That Critical Project is an element of the United States Army Corps of Engineers Re-study. *See* Trost depo at 15 and 76-77 (SFWMD employee/witness). It is in the top 5 of the Critical Projects list. *See* Trost Depo at 16 (SFWMD employee/witness).

18. Critical Projects were identified in part because there was a problem to be addressed in the Critical Project Area. Strowd depo at 65 (SFWMD employee/witness).

19. The problem to be addressed in the C-11 basin was the general water quality concern for water being discharged from C-11 into conservation area 3. Strowd depo at 65.

20. The C-11 critical project has not yet been implemented. *See* Strowd depo at 66 (SFWMD employee/witness).

21. One anticipated benefit of the critical project would be some benefit or improvement in phosphorus

loading to S-9 into conservation area 3, another would be to improve dissolved oxygen. *See* Strowd depo at 68 (SFWMD employee/witness).

22. The S-9 is a structure which discharges into the Everglades Protection Area. Ammon at 84-85 (SFWMD employee/witness); *see* Bechtel depo at 24 (SFWMD employee/witness).

23. The S-9 pump station discharges into Water Conservation Area 3A. *See* Trost depo at 32 (SFWMD employee/witness); *see* Strowd depo at 13 (SFWMD employee/witness).

24. The S-9 pump station does not have an NPDES permit. Trost depo at 32 (SFWMD employee/witness).

25. There are no pending applications for the S-9 to obtain an NPDES permit. Trost depo at 32 (SFWMD employee/witness).

* * *

27. Water Conservation Area 3A is a water of the United States. *See* Trost depo at 59 (SFWMD employee/witness). Affidavit of Bradley Waller at 4.

28. The intent of the Everglades program and the District is to meet water quality standards by the year 2006. *See* Trost depo at 62 (SFWMD employee/witness). According to the SFWMD, structures do not have to be in compliance until December 31, 2006. *See* Ammon depo at 40 (SFWMD employee/witness).

29. The district is trying to find out exactly what the sources of pollution are in the C-11 West Basin. *See* Trost depo at 69 (SFWMD employee/witness).

30. The Western C-11 is one basin. Trost depo at 71 (SFWMD employee/witness).

31. It contains other sub-basins. Trost depo at 71 (SFWMD employee/witness); Affidavit of Bradley Waller at 2.

32. The Water Conservation Areas are their own basins. Trost depo at 73 (SFWMD employee/witness). The Water Conservation Area 3A designation may be used interchangeably with basin. Ammon depo at 113 (SFWMD employee/witness); *see* Strowd depo at 37-38 (SFWMD employee/witness).

* * *

34. The direction of flow in the C-11 canal, when the S-9 is not operating, is from west to east. Trost depo at 74 (SFWMD employee/witness).

35. The S-9 backpumps water from the C-11 canal and delivers it into the conservation Areas. Ammon depo at 53 (SFWMD employee/witness).

36. When the S-9 pump station is turned on it discharges water from the C-11 canal into Water Conservation Area 3A. Ammon depo at 62 (SFWMD employee/witness).

37. Water in the C-11 canal is added to Water Conservation Area 3A by the S-9 structure during operation of the pump. Trost Depo at 78 (SFWMD employee/witness). The S-9 adds water from outside the Water Conservation Area 3A. *See* Ammon at 62 (SFWMD employee/witness).

38. There are water quality problems in the Everglades Protection Area. *See* Ammon depo at 14 (SFWMD employee/witness); *see* Affidavit of Dr. Ronald Jones.

39. In the C-11 West Basin the SFWMD is proceeding like there is a water quality problem there. Ammon depo at 28 (SFWMD employee/witness).

40. Nutrients, in particular, have been identified as a concern for inflows at the Everglades Protection Area. Ammon depo at 44 (SFWMD employee/witness).

41. Nutrients have specifically been identified in the Everglades Forever Act as a concern. Ammon depo at 44 (SFWMD employee/witness). Different chemical parameters other than nutrients could also affect the Everglades. *See* Ammon depo at 44 (SFWMD employee/witness).

42. The C-11 and the Everglades are separate bodies of water. *See* Affidavit of Bradley Waller at 2; Affidavit of Dr. Ron Jones at 5.

* * *

46. The S-9 has been sampled at phosphorus levels higher than natural background. *See* Bechtel depo at 52 (SFWMD employee/witness).

* * *

48. If the S-9 is not operating, water in the C-11 typically does not discharge to Water Conservation Area 3A. Bechtel depo at 29 (SFWMD employee/witness).

49. If the S-9 is operating, then water from C-11 canal discharges to Water Conservation Area 3A. Bechtel depo at 30 (SFWMD employee/witness).

50. There are exceedences above the water quality criteria for constituents other than phosphorus at the S-9, including exceedences for dissolved oxygen (DO) over 96

percent of the time and detections for pesticides. Bechtel depo at 56-57 and 87-89 (SFWMD employee/witness).

51. Running of pumps generally increases turbidity. Bechtel depo at 57 (SFWMD employee/witness).

* * *

56. The S-9 has the 7th highest load of phosphorus of structures discharging into the Everglades Protection Area and the 5th highest load for total nitrogen. Bechtel depo at 111 (SFWMD employee/witness).

57. There is no numeric standard set for phosphorus. Bechtel depo at 141 (SFWMD employee/witness). However, there is a default numeric standard of 10 ppb if rule making has not been instituted by a certain date in the future. Bechtel depo at 142 (SFWMD employee/witness).

58. In general terms when the canal gets to 4 feet above sea level or above, then S-9 pump station is operated, and then when it returns to sea level, the pump station operation is stopped. Strowd depo at 12 (SFWMD employee/witness); *See* Affidavit of Bradley Waller at 3.

59. The regulation schedule for the S-9 allows anticipatory draw down also. Strowd depo at 13 (SFWMD employee/witness).

60. The water in C-11 generally discharges to the east if the S-9 isn't operating and if the S-13A is opened. Strowd depo at 25 (SFWMD employee/witness); *see* Affidavit of Bradley Waller at 2.

61. The S-9 pumps water in the C-11 canal out of that basin. Strowd depo at 37 (SFWMD employee/witness). All of the South Florida Water Management District is hydrologically connected. Strowd depo at 41 (SFWMD employee/witness).

62. There are some, water quality constituents that are issues in the area. Strowd depo at 47 (SFWMD employee/witness).

63. There are three pumps at the S-9. Strowd depo at 50 (SFWMD employee/witness); Affidavit of Bradley Waller at 3.

64. Each one of the pumps can pump 960 cubic feet per second. Strowd depo at 50 (SFWMD employee/witness); *see* Affidavit of Bradley Waller at 3.

65. There are three pipes on the west side of the S-9. Strowd depo at 51 (SFWMD employee/witness). The water discharges out of those three pipes. Strowd depo at 51 (SFWMD employee/witness).

66. If you do not run the any of the three S-9 pumps, the water does not go out of those pipes. Strowd depo at 51 (SFWMD employee/witness).

67. If you just operate one of those pump structures, the water just discharges from one of the points/pipes. Strowd depo at 59 (SFWMD employee/witness).

68. The engines the run the S-9 pumps are effectively large bull dozer engines. *See* Strowd depo at 81 (SFWMD employee/witness).

69. Construction of the S-9 was completed in 1957. Strowd depo at 84 (SFWMD employee/witness); *See* Affidavit of Bradley Waller at 3.

70. The C-11 canal collects water from various sources. Strowd depo at 32-33 (SFWMD employee/witness); *see* Affidavit of Bradley Waller at 3-4.

71. Looking at the C-11 canal allows easy identification. *See* Strowd depo at 33 (SFWMD employee/witness).

72. The S-9 pump discharges polluted water into Water Conservation Area 3A, a jurisdictional Water of the United States, which is owned by the State of Florida and perpetually leased to the Miccosukee Tribe of Indians of Florida, without an NPDES permit. Affidavit of Dr. Ron Jones at ____. The water exiting the S-9 contains pollutants in concentrations not naturally found in the receiving waters. The principle pollutant of concern which the S-9 adds to the Water Conservation Area is phosphorous, though other constituents are also of concern. The Everglades is a phosphorous-limited system, in which concentrations of phosphorous in water above natural background levels cause imbalances in natural populations of aquatic flora and fauna. The S-9 is a critical project, for which there are immediate clean-up options. Affidavit of Dr. Ron Jones at 1.

73. The Everglades is an oligotrophic wetlands system which is phosphorus-limited. and phosphorus sensitive. The level of phosphorus is the defining chemical characteristic of the system in that the exhaustion of the available phosphorus limits the type and distribution of aquatic flora and fauna, and the addition of phosphorus above natural levels causes an imbalance in flora and fauna. Affidavit of Dr. Ron Jones at 2.

74. The Everglades has some characteristics of ultra-oligotrophic systems, which are even more phosphorus limited and phosphorus sensitive than oligotrophic systems. Affidavit of Dr. Ron Jones at 2-3.

75. Phosphorus is a nutrient. The addition of a nutrient to a biological system in which the nutrient is a

limit causes additional growth until the nutrient supply is exhausted or another limiting element is exhausted. Affidavit of Dr. Ron Jones at 3.

76. The addition of phosphorus to a phosphorus limited system, such as an oligotrophic system or ultra-oligotrophic system (i.e., like the Everglades) causes additional growth and an imbalance in natural aquatic flora and fauna. Affidavit of Dr. Ron Jones at 3.

77. A phosphorus-limited system cannot receive additional phosphorus beyond natural levels without causing additional growth beyond natural levels. Affidavit of Dr. Ron Jones at 3.

78. The oligotrophic conditions of the Everglades were recognized by the Florida Department of Environmental Protection and the South Florida Water Management District in the 1992 Settlement Agreement and Consent Decree in case number 88-1886-CIV-HOEVELER. The Consent Decree states that "The nutrient-lean (oligotrophic) condition of the aquatic ecosystem is one hallmark characteristic of the unspoiled Everglades that still exists in the Park, the Refuge and other parts of the Everglades. These ecosystems are changed by even slight increases in nutrient concentrations, particularly increases in the concentration of phosphorus." Affidavit of Dr. Ron Jones at 3.

79. The condition of the Everglades as a phosphorus-limited oligotrophic system is commonly recognized. For example, the phosphorus limitations and sensitivity of the Everglades was recognized in the Everglades SWIM Plan drafted by the South Florida Water Management District. Affidavit of Dr. Ron Jones at 3.

* * *

81. There is an imbalance of flora and fauna occurring in the receiving waters of the S-9. Affidavit of Dr. Ron Jones at 4.

82. The presence of cattail and increased biomass of sawgrass and other more common native Everglades plants can be found in the area receiving waters from the S-9. *See* Affidavit of Dr. Ron Jones at 4.

* * *

84. Much of the water comes from the C-11 canal, which is an external source of pollutants to the Everglades, a separate water body and of significantly different water quality than the Everglades. The canal water is generated from various different sources with various levels of quality. Affidavit of Dr. Ron Jones at 5.

85. The C-11 canal and WCA 3A are very different waters with different characteristics. In general, the C-11 canal has a much lower quality of water than the unimpacted Everglades. Affidavit of Dr. Ron Jones at 5.

* * *

AFFIDAVIT OF TRUMAN E. DUNCAN, JR.

STATE OF FLORIDA)
) ss.
COUNTY OF MIAMI-DADE)

I, Truman Eugene Duncan, Jr., being duly sworn, do depose and state:

1. I am employed by the Miccosukee Tribe of Indians of Florida ("Tribe", "Tribal") as the Tribe's Water Resources Director and have held this position since 1988. I hold a Masters of Science degree in Geology. As the Tribe's Water Resources Director, I represent the Tribe on all scientific committees which relate to the environment in general and to the Everglades in particular. I am authorized to execute this affidavit on behalf of the Tribe.

2. This affidavit is based on my personal knowledge of the facts and matters stated herein.

3. The Miccosukee Tribe of Indians of Florida is a federally-recognized Indian Tribe.

4. For generations, the Tribe and its members have resided and worked within the Florida Everglades.

5. The Tribe has land interests lying within the Florida Everglades, including a perpetual lease to most of Water Conservation Area 3A, and its way of life is dependent upon the natural Everglades.

6. The way of life of the Tribe and its members, including their religious, cultural, economic, and historical identity, is based upon the Everglades ecosystem and upon preservation of the Everglades in its natural state, including but not limited to the quantity and quality of Everglades waters.

7. The Tribe and its members rely upon the Everglades in its natural state to support their religious, subsistence and commercial activities.

8. The Tribe's religious activities traditionally include the planting and harvesting of corn on tree islands in the Everglades.

9. The Tribe's subsistence activities include gathering of materials, hunting, and fishing within the Everglades.

10. The Tribe's commercial activities include frogging, conducting airboat and other guided tours, and providing recreational and tourism facilities within the Everglades.

11. The S-9 is owned operated and maintained by the South Florida Water Management District.

12. The S-9 is located in Broward County.

13. The SFWMD is one of 5 water management districts in the State of Florida.

14. Everglades National Park is a 1.5 million acre International Biosphere Preserve, a World Heritage site and a wetland of international significance that is home to numerous threatened and endangered species.

15. The Army Corps of Engineers has been authorized by Congress to construct the Modified Water Deliveries project to restore water to Everglades National Park through northeastern Shark River Slough.

16. The project will involve creating gaps in the L-67 Levee between WCA 3A and WCA 3B, thus opening up relatively pristine WCA 3B and Everglades National Park to polluted water from the S-9 pump.

17. Water from the C-11 Basin that is being discharged through the S-9 pump travels down the L-67A canal that has a direct connection to Everglades National Park.

18. The C-11 West Basin is the subject of a Critical Restoration Project, of which the S-9 is a part. That Critical Project is an element of the United States Army Corps of Engineers Re-study. It is in the top 5 of the Critical Projects list.

19. The S-9 pump station discharges from the C-11 canal into Water Conservation Area 3A.

20. Water Conservation Area 3A is a water of the United States.

21. When the S-9 pump station is turned on it discharges water from the C-11 canal into Water Conservation Area 3A.

22. Water in the C-11 canal is added to Water Conservation Area 3A by the S-9 structure during operation of the pump. The S-9 adds water from outside the Water Conservation Area 3A.

23. Nutrients have specifically been identified in the Everglades Forever Act as a concern. Different chemical parameters other than nutrients have also been identified as potential concern in the Everglades.

FURTHER AFFIANT SAYETH NAUGHT.

_____

Truman Eugene Duncan, Jr.

WITNESS my hand and official seal in the County and State last aforesaid this 4th day of January, 1999.

_____

Affidavit of Bradley G. Waller

Miccosukee Tribe of Indians v. SFWMD

1. The historic flow of water in the South New River Canal was from the Everglades eastward to the ocean.

2. After the inception of the Central and Southern Florida Corps of Engineers project in 1949, numerous changes were made in the management of water levels and flow in the South New River Canal. Levees 33 and 37, part of the continuous North-South Levee, completed in 1956, effectively separated the western 8-mile segment of the canal in Water Conservation Area 3A (WCA 3A) from the eastern segment. Pump station 13, at the eastern end of the C-11, which serves primarily as a salinity-control structure, was completed in 1954 and became the eastern terminus of the freshwater section of the canal. This structure, located just west of U.S. Highway 441 (State Road 7), is designed to pump water into the tidal reach of the canal and also contains gates to release excess water eastward by gravity discharge. Structure 13 A constructed in 1956, in an earthen dam 4.5 miles west of S-13. This structure and dam divide the South New River Canal into two distinct drainage reaches. One reach drains to the east through S-13 and the other to the west by back-pumping at pump station 9 (S-9). Only occasionally, during periods of high water, are the S-13A gates opened to drain eastward.

3. Water from the C-11 Basin that is being discharged through the S-9 pump travels down the L-67A canal that has a direct connection to Everglades National Park.

4. The Western C-11 is one basin.

5. The S-13 A is a divide structure in the C-11 canal that divides the C-11 West Basin from the C-11 East Basin.

6. The direction of flow in the C-11 canal, when the S-9 is not operating, is from west to east.

7. The S-9 backpumps water from the C-11 canal and delivers it into the conservation areas.

8. When the S-9 pump station is turned on it discharges water from the C-11 canal into Water Conservation Area 3A.

9. Water in the C-11 canal is added to Water Conservation Area 3A by the S-9 structure during operation of the pump. The S-9 adds water from outside the Water Conservation Area 3A.

10. If the S-9 is operating then water from the C-11 canal discharges to Water Conservation Area 3A.

11. Pump station S-9, completed in 1957, is located between L-33 and L-37 at the eastern edge of Conservation Area 3. The S-9 is owned operated and maintained by the South Florida Water Management District. The S-9 is located in Broward County.

12. Operational criteria have been established for the structures located on the South New River Canal. The western part of the basin is maintained at an elevation of 4.0 MSL primarily by backpumping into WCA 3A at S-9 or occasionally by low volume gravity drainage at S-13A. Pump station S-9 has three large pumps with a combined capacity of about 2700 cubic feet per second.

13. Records of discharge and water levels for pump station S-9 have been maintained by both the US Geological Survey and the SFWMD. The period of record for this station dates back to 1958. Over the years, hundreds of thousands of acre-feet of water have been pumped into Water Conservation Area 3A via S-9. Since 1970, water levels have been maintained below 4.25 feet nearly 98 percent of the period of record (*see* attached figure 1). Since 1992, there has also been a noticeable increase in the volume of discharge entering WCA 3A via S-9 backpumping (*See* attached figure 2).

14. The sources of water being backpumped at S-9 are highly varied and dependent on hydrologic conditions in the basin. A large component of the backpumped water is from seepage return through the levees from WCA 3A. Additional contributors to the water backpumped by the S-9 include direct surface water discharge, induced groundwater flow, urban stormwater runoff, agricultural runoff, leachate from the Davie Landfill and to a minor extent direct rainfall among potentially others. All these components enter the South New River Canal and are discharged into WCA 3A via S-9 as a point source.

15. The operational criteria for the S-9 pump station has basically remained the same since 1957. Over the years pumping at S-9 has increased. With increased pumping and discharge by the S-9 comes additional loads of chemical constituents some of which harm the ecology of WCA 3A.

16. Protection of the WCA 3A environment from increased pumpage at S-9 is of utmost concern. WCA 3A is a navigable water of the United States, as federal statutes contemplate those terms.

17. The physical disturbance (increased velocity) caused by pumping the C-11 canal resuspends sediments that would under gravity discharge remain in bottom material, thus adding to the pollutant load discharged via S-9. Running of pumps generally increases turbidity.

Expert Qualifications

18. I have been working in the Everglades basin and adjacent areas as a professional hydrologist since 1972. My experience, qualifications and publications are summarized in my curriculum vitae included as attachment 3. I am extremely familiar with the operation of backpumping station S-9 and the western South New River Canal (C-11) basin. I began working in this basin in 1972, and in 1976 and 1981, I completed technical investigations in the basin for the US Geological Survey. Since I entered private industry, I have completed hydrologic projects at the Florida Wetlandsbank and Sunset Lakes and was involved as an expert witness in the Miller/Calder and Tomayo land condemnation cases, in the southwest Broward area. I have been qualified as an expert witness a number of times on cases related to the hydrology and water quality in South Florida, including cases involving the definition of navigable water of the United States.

FURTHER AFFIANT SAYETH NAUGHT.

_____

Bradley G. Waller

WITNESS my hand and official seal in the County and State last aforesaid this 4th day of January, 1999.

_____

AFFIDAVIT OF DR. RON JONES

I. Summary

1. The S-9 pump discharges polluted water into Water Conservation Area 3A, a jurisdictional Water of the United States, which is owned by the State of Florida and perpetually leased to the Miccosukee Tribe of Indians of Florida, without an NPDES permit. The discharged water contains pollutants in concentrations not naturally found in the receiving waters. The principle pollutant of concern which the S-9 adds to the Water Conservation Area is phosphorous, though other constituents are also of concern. The Everglades is a phosphorous-limited system, in which concentrations of phosphorous in water above natural background levels cause imbalances in natural populations of aquatic flora and fauna. The current operation of the S-9 harms the Everglades system by adding pollutants at the point of the S-9. The Everglades is harmed by continued delay. The S-9 is a critical project, for which there are immediate clean-up options.

II. Expert Qualifications

2. I am a full Professor of Biology and the Director of the Southeast Environmental Research Program at Florida International University. I have a Ph.D. in microbiology.

3. My education, experience and research work qualify me as a water quality expert, including water quality in wetland systems (especially oligotrophic systems, such as the Florida Everglades), general Everglades ecology and as an expert in Everglades water in general.

4. I have studied Everglades water quality for over thirteen years, and I have been involved in water quality analysis for over nineteen years.

5. I have been qualified in federal court (Southern District of Florida) as a water quality expert and have testified on water quality and related matters.

6. I have been qualified in federal court as an expert in wetlands and wetlands delineation.

7. I have been qualified in federal court as an expert in Everglades water, generally.

8. I have been qualified in federal court as an expert in Everglades ecology.

9. I served as a federal government expert on Everglades water quality in the federal Everglades case (filed in 1988), both before, during and after the signing of the settlement agreement in 1991 and its judicial approval in 1992.

10. I live in the C-11 Basin within 7 miles of the S-9, and I am very familiar with the S-9, its operation and the surrounding area.

11. Additional indication of my expertise are indicated in the attached curriculum vitae. (Attachment 1)

The Everglades as a Phosphorous-Limited System

12. The Everglades is an oligotrophic wetlands system which is phosphorous-limited and phosphorous sensitive. The level of phosphorous is the defining chemical characteristic of the system in that the exhaustion of the available phosphorous limits the type and distribution

of aquatic flora and fauna, and the addition of phosphorous above natural levels causes an imbalance in flora and fauna.

13. The Everglades has some characteristics of ultra-oligotrophic systems, which are even more phosphorous limited and phosphorous sensitive than oligotrophic systems.

14. Phosphorous is a nutrient. The addition of a nutrient to a biological system in which the nutrient is a limit causes additional growth until the nutrient supply is exhausted or another limiting element is exhausted.

15. The addition of phosphorous to a phosphorous-limited system, such as an oligotrophic or ultra-oligotrophic system (i.e., like the Everglades) causes additional growth and an imbalance in natural aquatic flora and fauna.

16. A phosphorous-limited system cannot receive additional phosphorous beyond natural levels without causing additional growth beyond natural levels.

17. The oligotrophic conditions of the Everglades were recognized by the Florida Department of Environmental Protection and the South Florida Water Management District in the 1992 Settlement Agreement and Consent Decree in case number 88-1886-CIV-HOEVELER. The Consent Decree states that "The nutrient-lean (oligotrophic) condition of the aquatic ecosystem is one hallmark characteristic of the unspoiled Everglades that still exists in the Park, the Refuge and other parts of the Everglades. These ecosystems are changed by even slight increases in nutrient concentrations, particularly increases in the concentration of phosphorous."

18. The condition of the Everglades as a phosphorous-limited oligotrophic system is commonly recognized. For example, the phosphorous limitations and sensitivity of the Everglades was recognized in the Everglades SWIM Plan drafted by the South Florida Water Management District.

19. I am a principle investigator for the United States Environmental Protection Agency on their Regional Ecosystem Monitoring and Assessment Program ("REMAP") for the Everglades. In that capacity, I have analyzed numerous samples of water and soil from the vicinity of the S-9. In addition, I have observed the area from both the air and on the ground. The results of our studies, these observations and other studies indicate that the areas surrounding the S-9 pump is highly degraded/polluted due to the input of excess nutrients, particularly phosphorous, from the pump.

Irreparable Harm at the S-9 Structure

20. There is an imbalance of flora and fauna occurring in the receiving waters of the S-9.

21. That imbalance is evidenced principally by the presence of cattail and the increased biomass of sawgrass and other more common native Everglades plants.

22. Delay in correcting the water quality problems associated with discharges from the S-9 pump will continue to perpetuate the imbalance of flora and fauna.

23. The effect of continued delay will be continued destruction of the Everglades. Those portions of the Everglades directly affected will be biologically destroyed irreparably. Areas not directly affected are harmed by the

loss of the affected Everglades habitat, so that reduction in the size of the natural Everglades areas adversely affects remaining portions, particularly lands of importance to the Miccosukee Tribe.

24. The destruction caused by excess phosphorous in the Everglades is not easily reversed and for all practical purposes is irreversible. The only known mechanism for restoration is the physical removal of phosphorous from the system.

25. There is substantial evidence that there are actions that could be taken that could alleviate the continued destruction of this area.

26. Pollution discharged by the S-9 into the Everglades is not limited to phosphorous. In fact, for example, I have seen machines used for removal of aquatic vegetation which appear to expose petroleum products to the water which is to be discharged. However, the potential impacts from those other pollutants are masked by the overwhelming impacts of excessive phosphorous.

Sources of Pollutants and Pollutant Transport

27. I have significant knowledge regarding the sources and kinds of pollutants being introduced into the Everglades by discharges from the S-9.

28. Water and pollutants which would otherwise flow to the east, are added to the Everglades by way of the SFWMD's operation of the S-9 point source.

29. Much of the water comes from the C-11 canal, which is an external source of pollutants to the Everglades, a separate water body and of significantly different

water quality than the Everglades. The canal water is generated from various different sources with various levels of quality.

30. The C-11 canal and WCA 3A are very different waters with different characteristics. In general, the C-11 canal has a much lower quality of water than the unimpacted Everglades.

WHEREFORE, the S-9 Should be required to have an NPDES permit.

I, Dr. Ronald D. Jones, being duly affirmed, do depose and state:

FURTHER AFFIANT SAYETH NAUGHT.

_____

Dr. Ronald D. Jones

WITNESS my hand and official seal in the County and State last aforesaid this 4th day of January, 1999.

_____

Affidavit of Tommy B. Strowd, Jr.

1. I am the Director of the Operations Division for South Florida Management District. I have held this position for 1.5 years. I have been employed by the South Florida Water Management District for 6.5 years.

2. I am a Professional Engineer and have a bachelor's degree in oceanographic technology from Florida Institute of Technology, Melbourne, Florida, in 1976.

3. I have been working in and familiar with the Army Corps of Engineers Central and South Florida Flood Control Project for 6.5 years.

4. I have previously been qualified as an expert in court in the areas of Civil Engineering and Water Resource Engineering.

5. The South New River Canal, was dug in the early 1900's to drain the area of Broward County in the Everglades to the east. The canal joined the Miami Canal in the west to the tide waters in the east.

6. Prior to 1954, the typical flow in the South New River canal was to the east, although water in the canal could flow east or west depending on respective water levels in the area and rainfall.

7. The Center and South Florida Flood Control (C&SF) Project began in 1948. The Project encompassed the area of the historical Everglades that began in the Butler Chain of lakes and continued southward through the Kissimmee River, into Lake Okeechobee and into south Florida ending at Florida Bay. The project included construction of numerous levees and canals and creation of water impoundment areas known as water conservation areas.

8. Water Conservation Area 3A is one of the water impoundments created by the Army Corps of Engineers under the C&SF Project.

9. Historically water traveled as sheet flow from the overflowing southeastern rim of Lake Okeechobee in a broad arc generally towards the south and then southwest. There were isolated natural outlets for the sheet flow through narrow depressions in the coastal ridge that separated the sheet flow from tide.

10. The C-11 Project is the portion of the Army Corps of Engineers' C&SF Project that specifically covered the areas of the C-11 basins and C-11 canal. The C-11 Project included improvement of the existing South New River Canal (named the C-11 Canal), construction of the S-9 pump station, the S-13A divide structure and the S-13 structure in the South New River Canal/C-11 Canal, and creation of Water Conservation Area 3A by the erection of levees, including Levees 33 and 37.

11. One purpose of the C-11 Project was to improve the South New River Canal to flow west to work in conjunction with the S-9 pump station and the S-13A divide structure.

12. The C-11 West basin and the S-9 pump station are in an area that was historically part of the Everglades. Prior to the implementation of the C&SF Project, the water in this particular area generally sheet flowed as one water body in a southerly direction.

13. L-33 and L-37 Levees were constructed between 1954 and 1959 to create and separate the water conservation areas from the remaining land area. The S-9 pump station moves water in the C-11 canal from outside Water Conservation Area to 3A to within Water Conservation Area 3A. The earthen levees do not prevent seepage from the water conservation area to

the east. The C-11 canal and other canals capture this seepage and it is returned to the Water Conservation Area through the operation of the S-9 pump station.

14. The S-9 pump station was constructed in the period between 1954 and 1959 in the existing C-11 canal. The S-9 structure consists of three pumps each with the capacity to pump 960 cfs. The main function of the S-9 pump station is to move water in C-11 canal about 60 feet, from the canal on the east side of the structure to the same canal on the west side of the structure. The purposes of the S-9 pump station include regional water supply and flood control for the C-11 west basin. It also returns seepage from Water Conservation Area 3A.

15. The sources of water entering the S-9 pump station are seepage from the Water Conservation Area and stormwater runoff from the C-11 west basin. Both sources were part of the historical everglades as the stormwater in the canal falls in an area that was historically Everglades.

16. The area east and west of the L-33 and L-37 levees forming the water conservation area are hydrologically connected. Even without use of the S-9 pump station, water travels as seepage between of the water conservation area and the C-11 west basin.

17. If the S-9 pump station is not operated in accordance with the design criteria, seepage water from the water conservation area could flood the C-11 west basin within a matter of days.

18. The C-11 west basin today contains urban and agricultural land uses with a large amount of residential areas.

19. I have read the foregoing affidavit and each and every statement contained herein is true and correct.

FURTHER AFFIANT SAYETH NAUGHT

_____

TOMMY B. STROWD, JR.
DIRECTOR, OPERATIONS DIVISION

Witness my hand and official seal in the State and County last aforesaid this 4th day of January, 1999

_____

DEFENDANTS' STATEMENT OF UNDISPUTED FACTS FOR CASE NOS. 98-6056 AND 98-6057

January 4, 1999

1. The State of Florida Department of Environmental Protection has been authorized by EPA to issue state permits under Section 403.0885, Florida Statutes, in lieu of federal NPDES permits in the State of Florida, other than NPDES stormwater permits and permits for federal facilities. Deposition of Richard Drew, December 23, 1998, at pages 10 and 11.

2. The S-9 pump facility sits directly in the C-11 canal. It pumps water through three 960 cfs pumps from the canal on the east side of the structure to the canal on the west side of the structure. Affidavit of Tommy Strowd, Jr., Jan. 4, 1999; Affidavit of George Horne, December 24, 1998.

3. The canal on both sides of the S-9 structure is a navigable water of the United States as that term is used in the Clean Water Act. Deposition of Bradley Waller, December 8, 1998, pages 84, 85.

4. Without pumping at the S-9 facility, water to the east of the structure would generally flow to the east, although water in the C-11 canal could also flow to the west depending on weather conditions. Affidavit of Strowd; Deposition of Waller at 75.

5. Water passing through the three 960 cfs pumps does not come in contact with any substances other than the inside of the pump and the impellers, both made out of stainless steel, carbon steel, and concrete. The pumps are water lubricated. Pollutants that have been detected passing through the S-9 facility are not from the three S-9 pumps. Affidavit of Horne.

6. The S-9 pump station is permitted by the State of Florida Department of Environmental Protection

under Section 373.4592(9)(k) and (l), Florida Statutes. This permit requires the District to analyze water quality in the area of the S-9 structure and then systematically identify sources of pollution in the C-11W Basin and eliminate the non-point sources of pollution through the District's regulatory authority as set forth in Chapter 373, Florida Statutes. The permit and related statute requires that the S-9 pump station discharge meet all state water quality standards by no later than December 31, 2006, including meeting the state water quality standard for phosphorus which will be established by December 31, 2003. Affidavit of Sharon Trost, January 4, 1999

7. The Bureau Chief of the Bureau of Water Facilities Regulation, Division of Water Facilities of the State of Florida Department of Environmental Regulation, states that merely transferring water from one water of the United States to another water of the United States does not need an NPDES permit. Deposition of Drew pages 15, 16, 25-27, 36, 37, 138, 139.

8. Originally all of the area surrounding the S-9 structure (the C11-W Basin and Water Conservation Area 3A) was a part of the Everglades. Water flowed as a sheet flow throughout the area in a southerly direction as one water body. Affidavit of Strowd; Deposition of Waller pages 45-48.

9. In the early 1900's the South New River Canal was dug to drain to the east the area of Broward County located in the Everglades. Although the flow in the canal was typically to the east, water in the canal could flow east or west depending on respective water levels in the area and depending on rainfall location. Affidavit of Strowd, Deposition of Waller page 75.

10. During the 1950's the S-9 pump station was placed in the South New River Canal. The S-9 pump station

pumps water from the canal at the east side of the structure to the canal on the west side of the structure. Affidavit of Strowd.

11. Also during the 1950's, L-33 and L-37 Levees were constructed to create and separate the water conservation areas from the remaining land area to the east. The C-11 canal (formerly the South New River Canal) was improved and widened east of the S-9 pump station. The construction of the S-9 pump station, Water Conservation Area 3A, and the improvements to the C-11 canal were all done as part of the Central and South Florida Flood Control Project begun in 1948 by the U.S. Army Corps of Engineers. The purpose of this construction was to improve drainage and provide flood protection and regional water supply. Affidavit of Strowd.

12. The water bodies west of the S-9 structure and L-33 and L-37 Levees and the areas to the east of these structures are hydrologically connected. Seepage occurs through the levees toward the east and is returned to the Water Conservation Area by the C-11 canal and other canals and the operation of the S-9 pump station. Affidavit of Strowd; Deposition of Waller page 114.

13. If the S-9 pump station is not operated according to its schedule, seepage water from the water conservation areas would flood the C11-W Basin. Affidavit of Strowd.

14. The District does not have, nor has it been required to obtain, a state or federal NPDES permit for the discharge from the S-9 pump station. Miccosukee Tribe of Indians of Florida Complaint, Paragraph 23, Friends of the Everglades Complaint, Paragraph 13; Deposition of Drew page 15.

Additional Statement of Undisputed Facts
For Friends of the Everglades
Case No. 98-6057

The conclusively established and undisputed facts[1] that form the basis for this Motion for Summary Judgment against the Friends of the Everglades are as follows:

1. The S-9 pump station is a flow diversion facility conveying water in the C-11 canal to within WCA 3A.

2. The S-9 pump station and its operation by the District do not add any pollutants to the water it conveyed.

3. The pollutants in the water conveyed by the S-9 pump station were introduced into the water before passing through the S-9 pump station.

4. The pollutants in the water passing through the S-9 pump station are a result of the C-11 West Basin discharge.

5. The C-11 canal is a navigable water of the United States.

6. In contravention of their complaint, the Friends have specifically admitted that neither the S-9 pump

[1] On August 25, 1998 the Defendants served Requests for Admission on the Friends of the Everglades. The Friends have failed to respond to the Requests within the prescribed time period, which expired on September 24, 1998. As such, the requests are deemed admitted pursuant to F.R. Civ. P. 36(a). These admissions conclusively establish undisputed facts that may form the basis for granting this Motion for Summary Judgment in favor of the Defendants. *See, United States v. 2204 Barbara Lane*, 960 F.2d 126 (11th Cir. 1992); *see also, Stubbs V. Commissioner of Internal Revenue Service*, 797 F.2d 936 (11th Cir. A986).

station nor the District add heavy metals, pesticides, phosphorous, nutrients, or unionized ammonia to the water conveyed by the S-9 pump station.

7. The S-9 pump station and the District are not the cause in fact of the pollutants in the water conveyed by the S-9 pump station.

8. Prior to the Central and South Florida Project, the area around the C-11 basin was all part of the Everglades watershed and the water flowed generally in a southerly direction as one broad, shallow sheet flow.

* * *

AFFIDAVIT OF SHARON M. TROST

* * *

3. In my position I oversee the Everglades Stormwater Program. This program is designed to analyze water quality at the structures that convey water into the Everglades Protection Area to determine if there are parameters of concern, then systematically move into the drainage basin, identify the source of pollutants, and eliminate the pollutants through the District's regulatory measures, and eventual water quality treatment facilities, if necessary.

4. The Everglades Stormwater Program is the implementation of the Regulatory Action Strategy (Exhibit 1), a condition of the permit issued to the District by the Department of Environmental Protection pursuant to the Everglades Forever Act, §373.4596.(9)(k) and (l) Fla. Stat. (1994), also known as the Non-ECP Permit. (Exhibit 2)

5. The S-9 pump station is one of the structures covered by the Non-ECP Permit and thus falls within the Everglades Stormwater Program.

6. In addition to meeting the requirements of the Everglades Stormwater Program, the Everglades Forever Act and the Non-ECP permit requires that the S-9 pump station discharge meet all state water quality standards no later than December 31, 2006. This includes meeting the numerical state water quality standards for phosphorous which will be established by December 31, 2003.

7. The sources of water to the western C-11 canal which flows into the S-9 pump station are primarily non-point sources of water. Those non-point sources are subject to the regulatory authority of the South Florida Water

Management District. Any point sources in the C-11 Western Basin would be regulated through the Department of Environmental Protection.

8. In addition to the Everglades Stormwater Program, the S-9 pump station is also being evaluated and can be the beneficiary of programs under the Army Corps of Engineers' Restudy, a reevaluation of the C&SF Flood Control Project.

9. Under the Water Resources Development Act of 1996, Congress authorized the expediting of certain projects that were identified under the Restudy that could begin implementing solutions before the Restudy was completed. These projects are commonly referred to as "Critical Projects". The S-9 pump station and the C-11 West basin are on the Army Corps of Engineers' list of Critical Projects.

10. The District has also established the Western C-11 Basin Water Quality Improvement Strategy (Exhibit 3) to provide framework to ensure that the water quality criteria for discharges from the western C-11 Basin to the Everglades Protection Area will be met as required. To date, the initial water quality monitoring program has been implemented.

* * *

FURTHER AFFIANT SAYETH NAUGHT

_____

Sharon M. Trost, P.G., AICP

Witness my hand and official seal in the State and County last aforesaid this 4th day of January, 1999

_____

Exhibit 2
Affidavit of Sharon Trost
January 4, 1999

Page II-1; Figures II-1, II-2, II-12 and II-13

SECOND REVISED DRAFT PERMIT

* * *

II REGIONAL OVERVIEW

A. Everglades Protection Area

The EPA is defined by the Act as: "Water Conservation Areas 1, 2A, 2B, 3A, and 3B, the Arthur R. Marshall Loxahatchee National Wildlife Refuge (the Refuge), and the Everglades National Park" (ENP).

The EPA boundaries are shown on Figure II-1. All District ECP and non-ECP structures which discharge into, within or from the EPA are shown on Figure II-2.

* * *

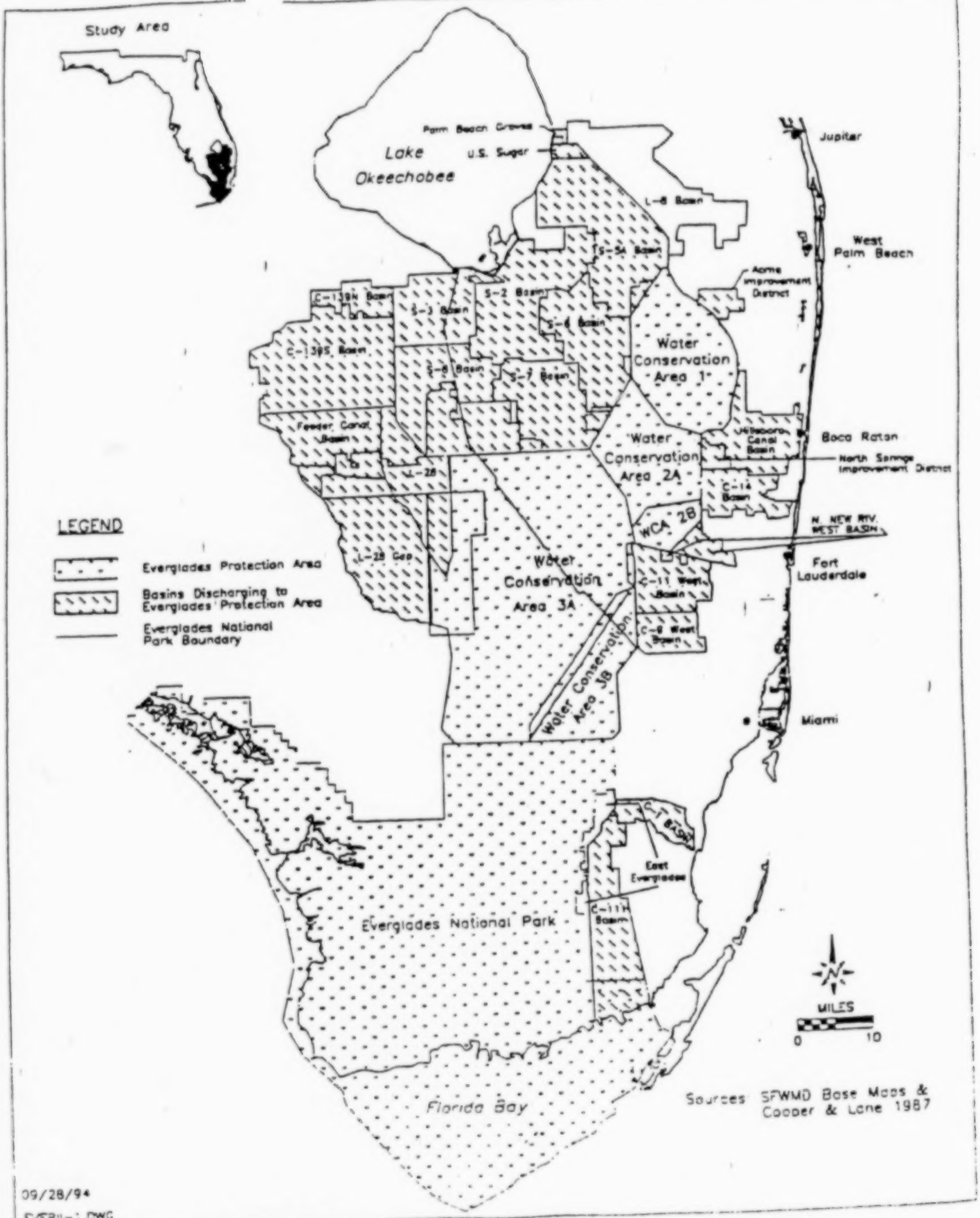

Figure II-1. Everglades Protection Area

II-2

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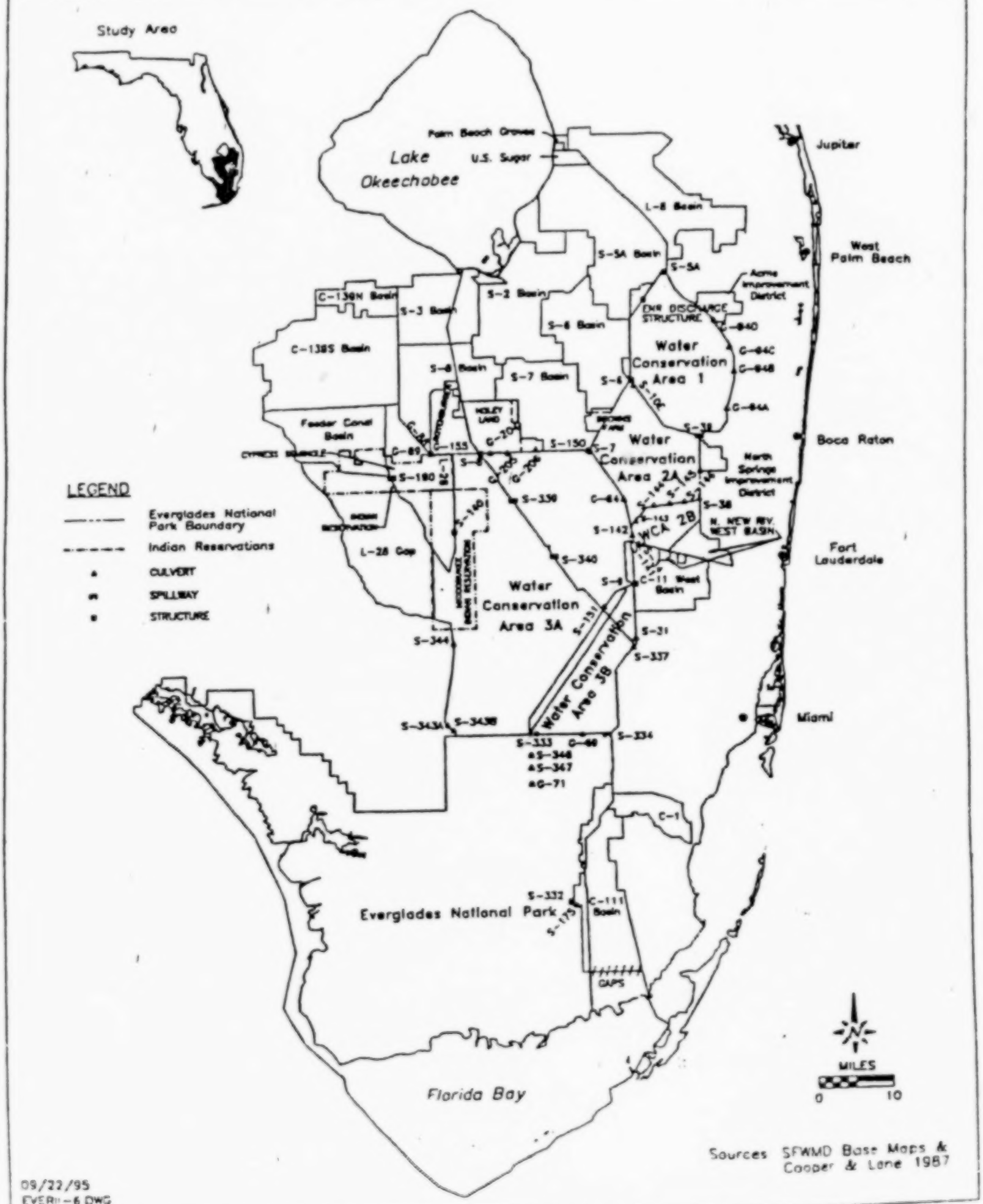
Study Area
Lake Okeechobee
Palm Beach Groves
U.S. Sugar
L-8 Basin
S-5A Basin
S-5A
S-2 Basin
S-3 Basin
C-139N Basin
C-139S Basin
S-4 Basin
S-6 Basin
S-7 Basin
Water Conservation Area 1
S-6
S-10A
S-10C
S-10E
S-10F
S-10G
S-10H
S-10I
S-10J
S-10A
S-10B
S-10C
S-10D

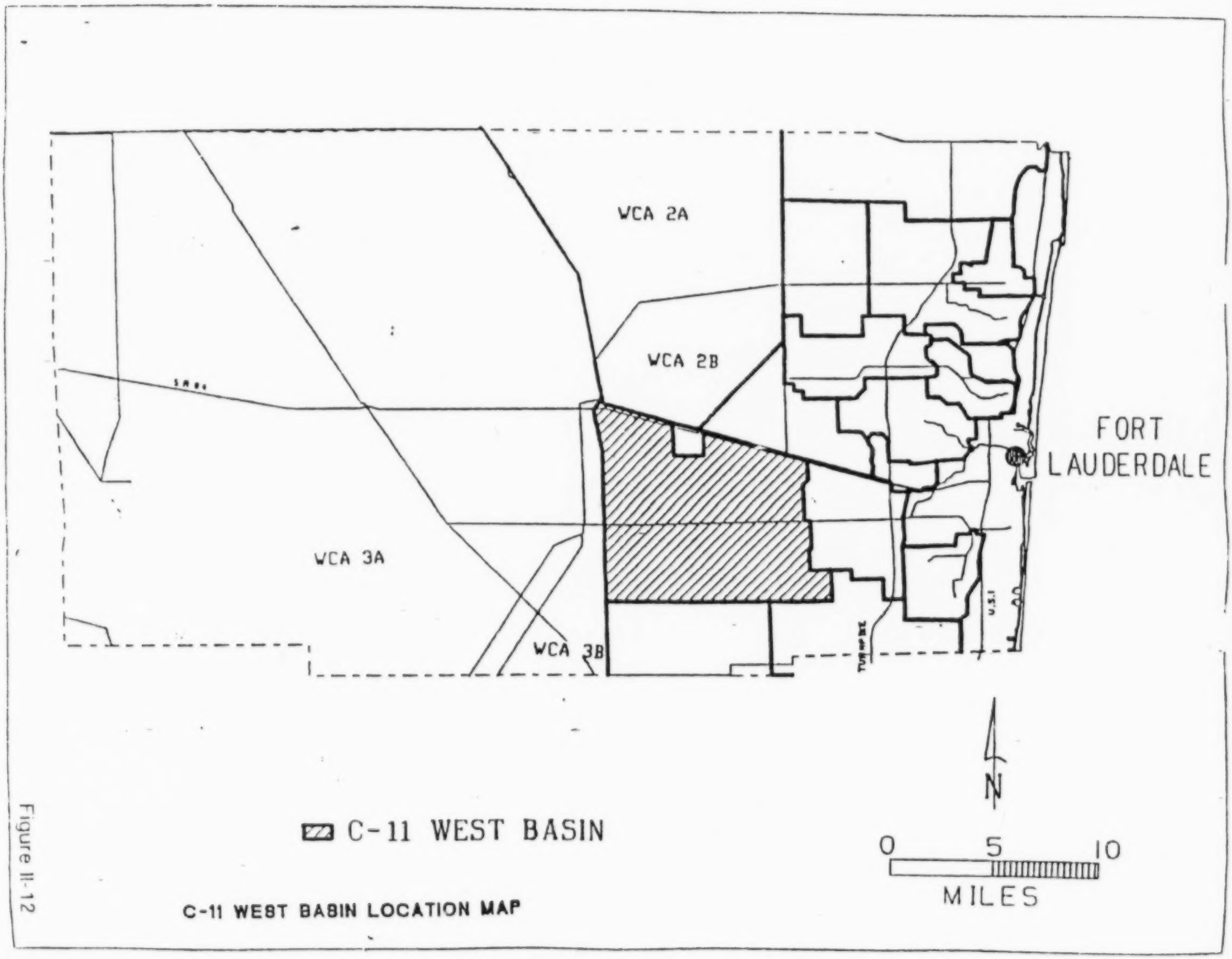

Figure II-12

C-11 WEST BASIN LOCATION MAP

C-11 WEST BASIN

52.600 ACRES

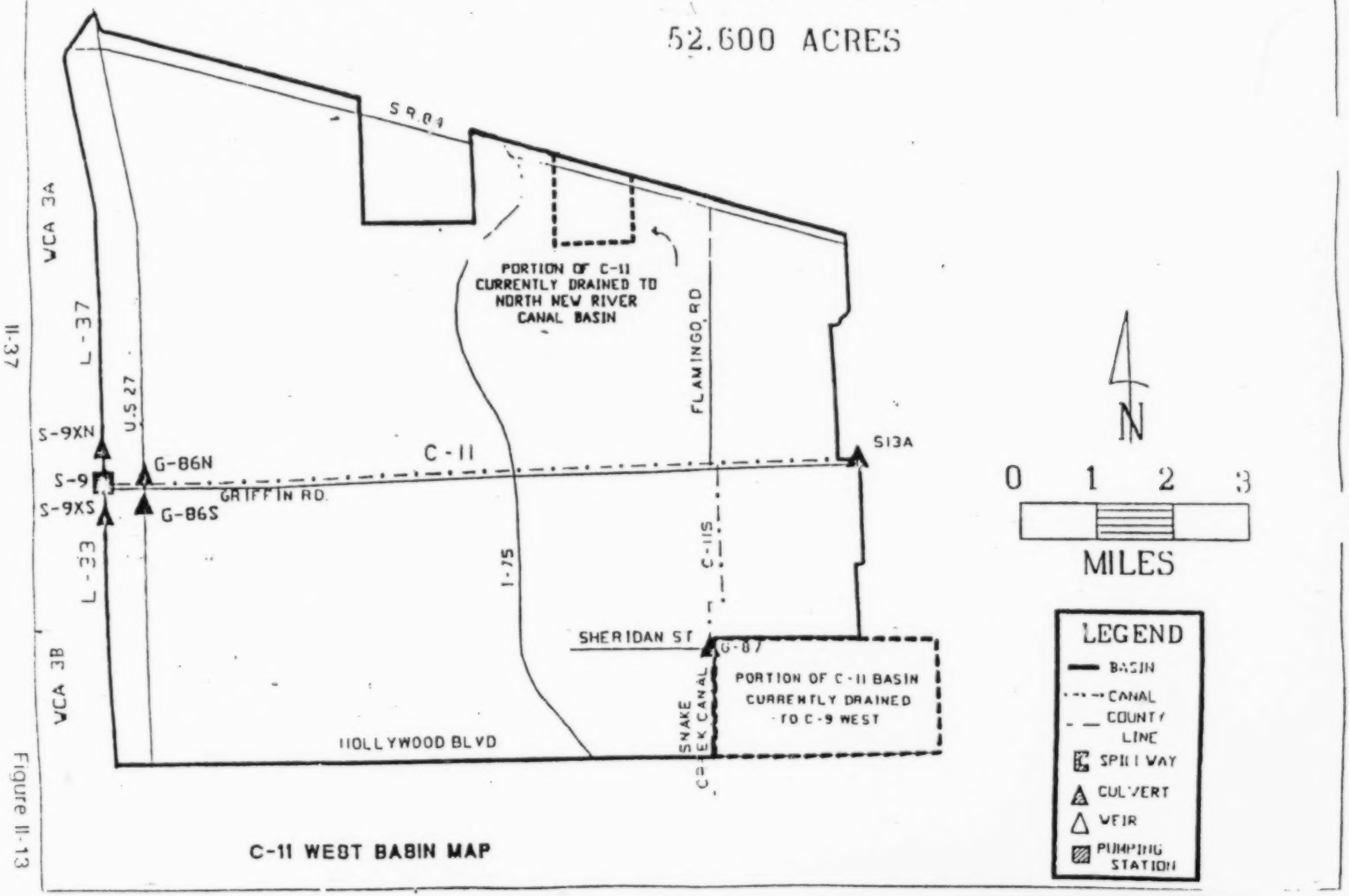

Figure II-13

C-11 WEST BABIN MAP

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PLAINTIFF MICCOSUKEE TRIBE'S RESPONSE IN OPPOSITION TO DEFENDANTS' MOTION FOR FINAL SUMMARY JUDGMENT AND MEMORANDUM IN SUPPORT AND RESPONSE TO DEFENDANTS' STATEMENT OF UNDISPUTED FACTS

January 20, 1999

* * *

RESPONSE TO DEFENDANTS' STATEMENT OF UNDISPUTED FACTS FOR CASE NOS. 98-6056 AND 98-6057.

The following is a paragraph by paragraph discussion of the facts in Defendants' Statement of Undisputed Facts and whether or not they are disputed. Not all these facts appear to be material to the determination of whether or not the S-9 pump station is required to have an NPDES permit.

1. The Tribe does not dispute that the State of Florida Department of Environmental Protection has been authorized by EPA to issue state permits under Section 403.0885, other than NPDES stormwater permits and permits for federal facilities. However, such fact is not material to the case. It is irrelevant who issues the permits. To the extent that Defendants' wording may suggest anything else it is unanswerable or contested.

2. It is unclear what Defendants mean when they indicate "the S-9 pump facility sits directly in the C-11 canal." Defendants' Statement at 2. Thus, it is contested. However, the S-9 does connect levees 33 and 37 and forms an integral part of WCA 3A's eastern outer boundary. Waller rebuttal Affidavit at 1 (Attachment 1). The S-9

does pump water through three 960 cfs pumps from the Canal. However, the Defendants go on to say it "pumps from the canal on the east side of the structure to the canal on the west side of the structure" Defendants' Statement at 2. This is not entirely accurate. It pumps to Water Conservation Area 3A, in which there is a canal extension, which is submerged. *See* Strowd depo at 13 (SFWMD employee/witness). When water levels are above the bank of that canal, it is essentially a continuous water body, and so it is probably more accurate to say it discharges into 3A. Strowd depo at 13 (SFWMD employee/witness). Water Conservation Area 3A is on the West side of the S-9. Water is pumped from East to West. To the extent that Defendants' wording may suggest anything else it is unanswerable or contested.

3. The Tribe does not dispute that the C-11 Canal is a navigable water of the United States as that term is used in the Clean Water Act. Waller depo at 84-85. Water Conservation Area 3A is a navigable water of the United States as that term is used in the Clean Water Act. Waller depo at 84-85. To the extent that the Defendants' vague wording may suggest anything else it is unanswerable or contested.

4. Without pumping at the S-9 facility, water to the east of the structure would generally flow to the east. Affidavit of Strowd (SFWMD employee/witness); Waller depo at 75. You could have reverse flow under certain unusual very extreme hydrologic conditions. Waller depo at 75; Waller rebuttal Affidavit at 1 (Attachment 1). However, it could not naturally flow into the Water Conservation Area, to the West, without the operation of the S-9 pump station. Waller rebuttal Affidavit at 1

(Attachment 1). To the extent the Defendants intend to imply anything additional it is unanswerable or contested.

5. The Tribe is unable at this time to confirm or deny the statements in this paragraph. It is true, however, that some of the machines used to maintain the S-9 pump station are maintained with petroleum products and make contact with the water. Affidavit of Ron Jones at 5 (Attached to Tribe's Motion for Summary Judgment as Exhibit C and hereto as part of Attachment 3); *see* Horne Affidavit at 2(SFWMD employee/witness) (Affidavit attached to Defendants' Motion for Summary Judgment as "F").[2] To the extent the Defendants intend to imply anything additional it is unanswerable or contested.

6. The contents of paragraph 6 are not in any way material to the instant proceedings except to indicate that the discharges from the S-9 are not being required to meet State Water Quality Standards by the State of Florida. Furthermore, the paragraph contains statements of legal argument which are not factual in nature. This is highly relevant to the issues in a somewhat related case in which Judge Davis has called into question the legitimacy of the Everglades Forever Act, 373.4592, Florida Statutes. *See* Attached Opinion from Judge Davis (Attachment 2).

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[2] The Tribe is simultaneously moving to strike Horne's affidavit, filed by Defendants, as the Defendants attempted to list him as a witness in contravention of the Federal Rules of Civil procedure. To the extent it might be ruled otherwise admissible the Tribe relies on its admissions.

It is correct that the S-9 pump station has a state permit from the State of Florida Department of Environmental Protection, along with 36 other structures which discharge into within or from the Everglades Protection Area. This fact has no direct relation to the issues in this case. Defendants incorrectly cite the law under which it received its state law permit. The permit was actually issued under Section 373.4592(9)(k) and (l), Florida Statutes. The permit requires monitoring and analysis of water quality in the area of the Non-ECP structures, of which the S-9 is one. It is the Tribe's position that the permit is completely inadequate to protect the Everglades Protection Area from the impacts of pollution, fails to systematically identify sources of pollution in the C-11W Basin and that it fails to eliminated non-point sources of pollution through the District's regulatory authority as set forth in Chapter 373, Florida Statutes. *See* Jones rebuttal Affidavit at 1 (Attachment 3). It does little or nothing to actually reduce the pollution to the Everglades Protection Area and involves long delays. *See* Jones rebuttal Affidavit at 1 (Attachment 3). The permit and related statute do require that the S-9 pump station discharges meet all state water quality standards by no later than December 31, 2006, including meeting the state water quality standard for phosphorus which is supposed to be established by December 31, 2003. Affidavit of Sharon Trost (SFWMD employee/witness), January 4, 1999; *see* § 373.4592, Florida Statutes. These state law legal matters are entirely irrelevant to whether or not the S-9 must be required to have a federal permit, delegated to the state for issuance, to discharge pollutants into navigable waters of the United States. To the extent the Defendants intend to imply anything additional it is unanswerable or contested.

7. In a contemporaneous filing the Tribe is moving to strike the affidavit of Richard Drew cited in this paragraph as he has made expert opinions, which Defendants are attempting to use as evidence in this case when no expert witness summary was ever provided. Thus, no adequate opportunity for rebuttal was available to Plaintiffs. He was not presented as an expert witness but as a fact witness, and he was improperly listed even as a fact witness in the case. *See* Plaintiff Tribe's Motion to Strike testimony of Richard Drew, George Horne and Joseph M. Moore. Mr. Drew said approximately what is recorded on the pages indicated of his deposition. His opinions on the law are not facts which the Plaintiff must contest. Further, he is not a lawyer and not qualified to testify as such. To the extent the Defendants intend to imply anything additional it is unanswerable or contested.

8. Originally, virtually all of South Florida was a part of the Everglades Basin. Waller rebuttal Affidavit at 1 (Attachment 1). Water in the Everglades historically sheet flowed throughout this area in a southerly direction. To the extent the Defendants intend to imply anything additional it is unanswerable or contested.

9. It is correct that in early 1900's the South New River Canal (C-11 canal) was dug to drain to the east the area of Broward County located in the Everglades. Waller rebuttal Affidavit at 1 (Attachment 1); Strowd Affidavit (SFWMD witness/employee); Waller depo at 45-48. Although the flow in the canal was typically to the east, water in the C-11 canal could occasionally, under very extreme hydrologic conditions, flow from east to west. Waller rebuttal Affidavit at 1 (Attachment 3); Strowd Affidavit (SFWMD witness/employee). However, it would not naturally enter the Everglades Protection Area

without the operation of the S-9 pump station. Waller rebuttal Affidavit at 1 (Attachment 3). To the extent the Defendants intend to imply anything additional it is unanswerable or contested.

10. During the 1950's the S-9 was placed between the levees at the eastern boundary of Water Conservation Area 3A. See Waller rebuttal Affidavit at 1 (Attachment 3). You are referred to the discussion in paragraph 2 above regarding the balance of the Defendants' statements in paragraph 10. To the extent the Defendants intend to imply anything additional it is unanswerable or contested.

11. The statements in paragraph eleven can not, at present, all be verified by the Tribe. They do not appear to be material facts to which any dispute would be of importance to the decision about whether or not the S-9 pump station must have an NPDES permit. To the extent the Defendants intend to imply anything additional it is unanswerable or contested.

12. Virtually every water in the Everglades Ecosystem could arguably be considered hydrologically connected. *See* Waller rebuttal Affidavit at 1 (Attachment 1); *see* Strowd depo at 41 (SFWMD employee/witness). Some seepage occurs through levees and the S-9 does pump water in the C-11 to the Water Conservation Area. Strowd Affidavit (SFWMD witness/employee); Waller depo at 114. To the extent the Defendants intend to imply anything additional it is unanswerable or contested.

13. Paragraph 13 is not material to the issue of whether or not the S-9 should be required to have an NPDES permit. It may be factually incorrect as well. However, the statement is too vague sweeping to address.

To the extent the Defendants intend to imply anything additional it is unanswerable or contested.

14. The District does not have a state of federal NPDES permit for the discharge from the S-9 pump station. Tribe's Complaint at ¶ 23; Friends' Complaint at ¶ 13; Drew depo at 15. To the extent the Defendants intend to imply anything additional it is unanswerable or contested.

As to the "Additional Statement of Undisputed Facts for Friends of the Everglades Case No. 98-6057," identified at pages 5 and 6 of Defendants' Statement of allegedly Undisputed Facts, it appears clear that the Defendants do not intend to indicate that they are undisputed facts as to the Plaintiff Tribe. It is therefore unnecessary for the Tribe to go into detail as to how it contests these statements. They are contested to the extent they are contrary to the Tribe's positions stated in its own motion for summary judgment and in its opposition to the Defendants' so-called undisputed facts. In fact, if not in procedure, it is apparent that they are also largely disputed by Friends of the Everglades. It is unfair and misleading to consider them in the context of the summary judgment as they are largely contested and often actually address issues of law rather than fact.

* * *

Affidavit of Bradley G. Waller

Miccosukee Tribe of Indians v. SFWMD

1. I hereby adopt and incorporate my Affidavit, which was attached to the Miccosukee Tribe of Indians of

Florida's ("Tribe") Motion for Summary Judgment and is attached hereto and entitled Exhibit B, as it was denominated when attached to the Tribe's Motion.

2. Water in the C-11 canal could occasionally, under very extreme hydrologic conditions, flow from east to west. However, it would not naturally enter the Everglades Protection Area without the operation of the S-9 pump station.

3. Virtually all of the SFWMD and Everglades Ecosystem is hydrologically connected in some way. However, dynamic manmade features have altered and interfered with those connections, compartmentalized large areas of South Florida, and operational and structural changes have altered any semblance of natural water levels and flow patterns.

4. The S-9 connects levees 33 and 37 and forms an integral part of WCA 3A's Eastern outer boundary.

FURTHER AFFIANT SAYETH NAUGHT.

_____

Bradley G. Waller

WITNESS my hand and official seal in the County and State last aforesaid this 20th day of January, 1999.

REBUTTAL AFFIDAVIT OF DR. RONALD D. JONES

I, Dr. Ronald D. Jones, being duly affirmed, do depose and state:

1. I hereby adopt and incorporate my Affidavit, which was attached to the Miccosukee Tribe of Indians of

Florida's ("Tribe") Motion for Summary Judgment and is attached hereto and entitled Exhibit C, as it was denominated when attached to the Tribe's Motion.

2. I am intimately familiar with the Non-Everglades Construction Project Permit. The S-9 pump station is one of the structures permitted by that state of Florida permit. I have thoroughly reviewed the permit and permit application. I was a witness in the case challenging that permit, and I was present for much of the hearing.

3. The Non-ECP permit is completely inadequate to protect the Everglades Protection Area from the impacts of pollution. Contrary to assertions of the SFWMD, it fails to systematically identify sources of pollution in the C-11W Basin and it fails to eliminated non-point sources of pollution through the District's regulatory authority.

4. The actions required by the permit do very little or nothing, that actually reduce the pollution to the Everglades Protection Area and involve long delays.

5. The S-9 pump station pumps water of very low quality (polluted) water from the C-11 canal into a higher quality body of water (Water Conservation Area 3A which is connected to other Everglades Areas) into which it would not flow absent the pumping.

6. The C-11 canal and the Everglades have very different characteristics. The Everglades, which includes Water Conservation Area 3A, is a Class III water body having high water quality and a diverse and vibrant biological community that depends upon the oligotrophic (low nutrient) water it receives from rainfall and overland flow. The C-11 canal is a drainage and water collection system that serves the C-11 Basin in western Broward County. As

such the waters it contains are not ologotrophic and are dramatically different from the waters in the Everglades. The water in the C-11 is incapable of supporting a natural Everglades community and in fact the pumping of this water into the Everglades through the S-9 pump leads to destruction of the biological communities found in WCA 3A. The water in the C-11 canal is neither compatible with the water in the Everglades nor is it in any way comparable to it.

7. I am very familiar with the activities of the regulators of the Everglades Protection Area. None of the current activities are designed to address the water quality problems being caused by the water the S-9 discharges into the Everglades Protection Area.

8. The polluted water being discharged by the S-9 is causing or contributing to the water quality problems in Water Conservation Area and Everglades National Park.

WHEREFORE, the S-9 should be required to have an NPDES permit.

FURTHER AFFIANT SAYETH NAUGHT.

_____

Dr. Ronald D. Jones

WITNESS my hand and official seal in the County and State last aforesaid this 20th day of January, 1999.

_____

SOUTH FLORIDA WATER MANAGEMENT'S RESPONSE TO MICCOSUKEE TRIBE'S MOTION FOR SUMMARY JUDGMENT (MEMORANDUM OF LAW INCLUDED)

January 22, 1999

* * *

I. Concise Statement of The Material Facts As to Which There Are Genuine Issues To Be Tried

The District contends there are *no material facts as to which there exist genuine issues to be tried* in this case.

The District wishes to clarify some of the Plaintiff's proposed facts. None of these qualifications result in material disputed facts for the purposes of this motion.

* * *

. . . [T]he use of the term "Everglades" must be defined as used in the assertions. "Everglades" could mean the Everglades National Park, the Everglades Protection Area, as defined in Section 373.4592(2)(h), Fla. Stat., or the historical "Everglades" as they existed prior to man's alteration of the hydrologic system. The Everglades National Park is 20-40 miles away from the S-9 pump station. (Jones deposition, filed by SFWMD under Certificate of Service dated 1/22/99; Waller deposition, SFWMD's Exhibit "G" to support its Motion for Summary Judgment dated 1/4/99). Water Conservation Area 3A, while created before the Everglades Forever Act as a water impoundment area (Strowd Affidavit; SFWMD's Exhibit "E" to support its Motion for Summary Judgment dated 1/4/99) is designated part of the Everglades Protection Area as

defined in Section 373.4592(2)(h), Fla. Stat. The historical Everglades began in the area of the Butler Chain of Lakes, and flowed south through the Kissimmee River Area, to Lake Okeechobee and south southwesterly to Florida Bay. (Strowd Affidavit; SFWMD's Exhibit "E" to support its Motion for Summary Judgment dated 1/4/99)

The District has attempted in good faith to respond to the assertions with as much specificity as possible. Nevertheless, resolution of these issues is not necessary for the adjudication on the Motion for Summary Judgment at bar. Essentially, the issues in the Motion for Summary Judgment are whether the operation of the S-9 pump station requires an NPDES permit according to the criteria for those permits set out in the Clean Water Act and corresponding case law. The factual clarifications below are not material to this resolution.

Specific Clarifications

The Defendants respond to the Tribe's Statement of Undisputed Facts as follows:

* * *

2. The District does not dispute nor require clarification for factual assertions 9-12, 14, 15, 17-21, 24, 25, 27, 29-32, 37-41, 46, 48-51, 56-59, 62-71, 73-79, 81, 82.

3. Factual assertions 13 and 16 – The District agrees that water from the C-11 basin could travel down the L67A canal and miles later could enter Everglades National Park after passing through other structures. The possible creation of gaps in the L67 by the Army Corps of Engineers several miles down from the S-9 discharge could release some water from the S-9 discharge into Water

Conservation Area 3B. However, the District contends that factual assertions 13 and 16 are incomplete. Only approximately one half of the discharge from S-9 pumps will flow down the L67A canal, with the remaining water from the S-9 discharge going into other canals in WCA-3A. (Waller deposition, SFWMD;s Exhibit "G" to support its Motion for Summary Judgment dated 1/4/99). The water must travel over 20 miles to reach the Everglades National Park. Dilution with water from the marsh can occur along the way. (Waller deposition, p. 102-107, SFWMD's Exhibit "G" to support its Motion for Summary Judgment dated 1/4/99). However, these clarifications are not material to the resolution of this motion.

4. Factual assertions 22, 23, 36, 49, 65, 72 – The District clarifies the use of the terms "discharge". The term was not defined during the depositions cited. The deponents cited by the Tribe used the term "discharge" as a lay term, without reference to the CWA definition that includes the "addition of a pollutant" (see above). The District contends, and it is supported by the affidavits, that the operation of the S-9 pump station does not add pollutants to the water it conveys. (Horne Affidavit, SFWMD's Exhibit "F" to its Motion for Final Judgment; Jones deposition, p. 30, 90, 91, 108, 109, filed by SFWMD under Certificate of Service dated 1/22/98; Waller deposition, p. 93-95 SFWMD;s Exhibit "G" to support its Motion for Summary Judgment dated 1/4/99). The District denies the assertion under the definitions of the Clean Water Act.

* * *

8. Factual Assertion 35 – S-9 delivers water to within Water Conservation Area 3A (WCA 3A), not the other

water conservation areas. This is not a material disputed fact that would prevent resolution of this motion.

9. Factual assertion 42 – While the District does not dispute that the Everglades are generally a marsh and the C-11 is a canal, neither side disputes that the C-11 canal continues from WCA 3A, part of the Everglades Protection Area, to the C-11 West Basin. It is present on both sides of the artificial levee which now separates what was once one natural body of water. (Jones deposition, p. 110, 111, filed by SFWMD under Certificate of Service dated 1/22/99; Strowd Affidavit, SFWMD's Exhibit "E" to support its Motion for Summary Judgment dated 1/4/99). Ground water flows and historical surface water flows indicate that these areas are still hydrologically connected. (Strowd Affidavit, SFWMD's Exhibit "E" to support its Motion for Summary Judgment dated 1/4/99).

* * *

17. Factual assertion 72 – The District does not dispute the assertion with the following clarifications:

> Sentence One: The land that is leased to the Miccosukee Tribe does not include the areas of WCA 3A adjacent to the S-9 structure and only includes portions of the western areas of the WCA. (See Exhibit "A"). As the District does not contest the Tribe's standing in this case this is not a dispute over a material fact and does not affect the court's ability to decide this motion.
>
> Sentence five: The District agrees that the S-9 pump station is a critical project, however it is unclear what Dr. Jones means by "immediate clean up options." Given the constraints of funding, resources and technology it is impossible to guess what "immediate" could mean and thus the

> District disputes this portion of the assertion. This issue is not a material fact that would prevent the adjudication of the motion for summary judgment.

* * *

19. Factual assertions 84 and 85 – See the District's response to factual assertion 42.

TRANSCRIPT OF HEARING
BEFORE THE HONORABLE
WILKIE D. FERGUSON, JR.
February 4, 1999

* * *

[66] MS. SOLE-CALAS: Your Honor, very briefly. I do not want to reiterate all the points I made in my previous discussions. I do agree with counsel, there are no material disputed facts that relate to the five factors for an NPDES permit.

Both sides agree and again I agree that our differences lie in the application of the law for these factors.

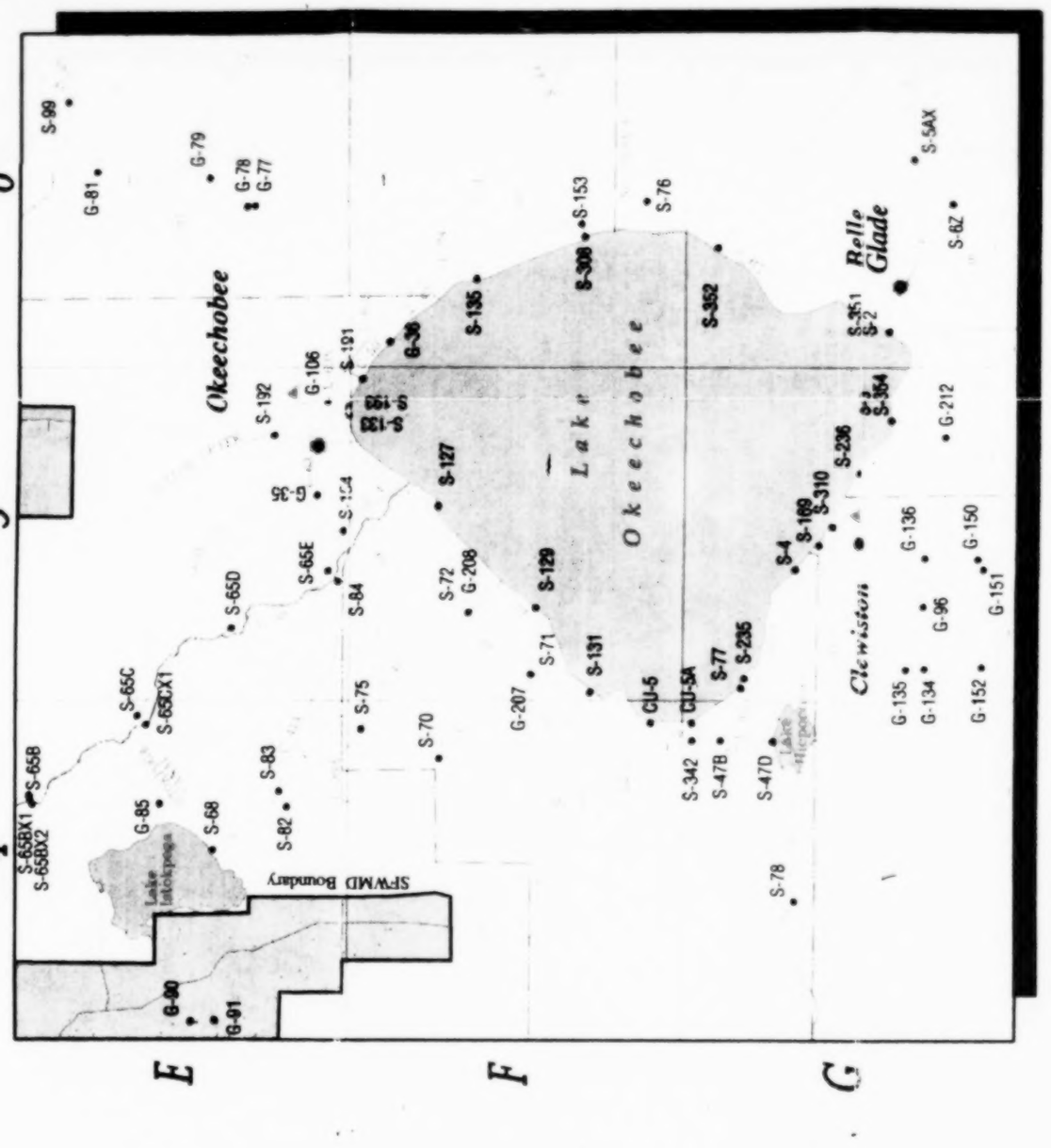
* * *

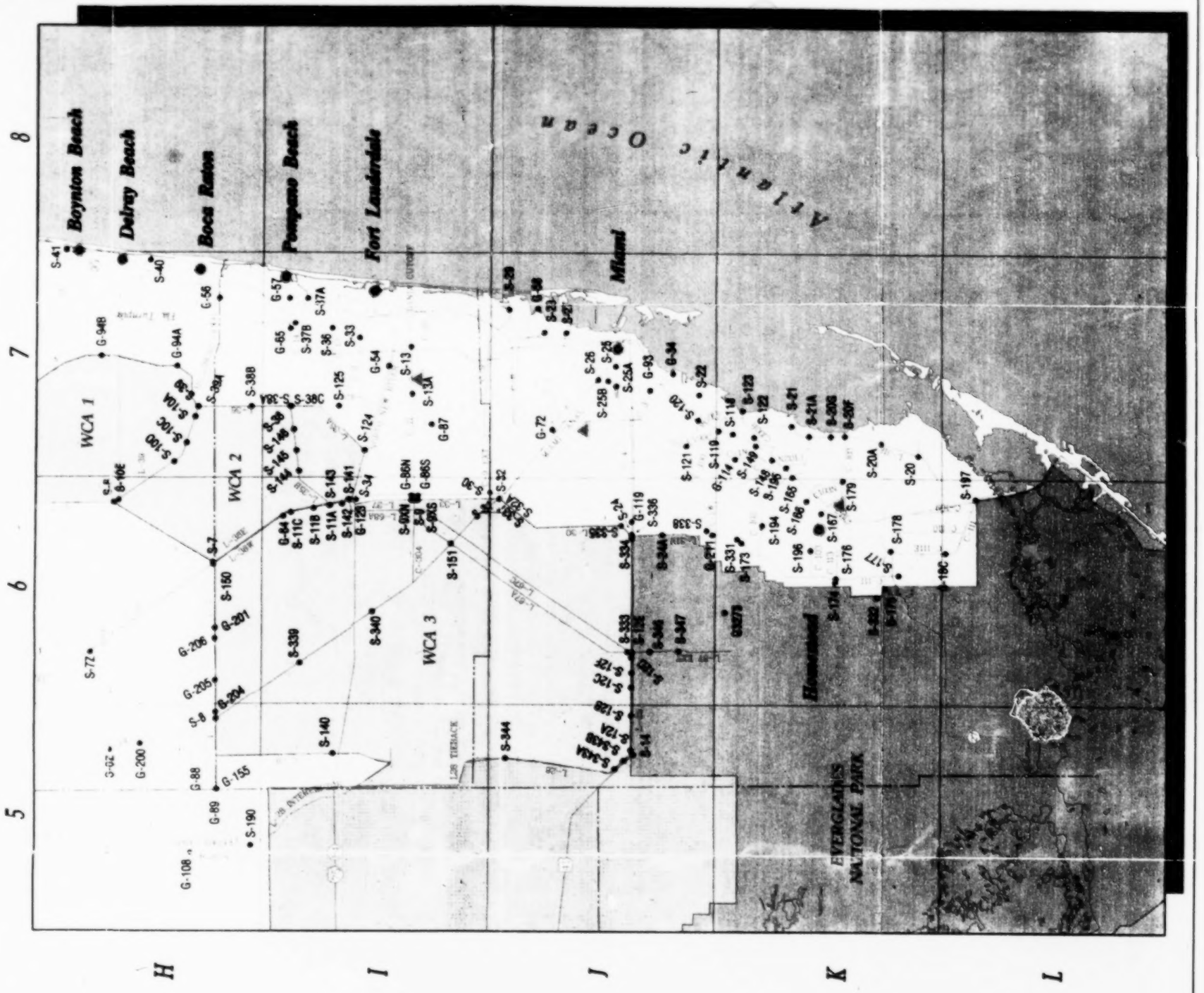
STRUCTURE AND CANAL LOCATIONS

Revised 09/29/93

PLAINTIFF'S EXHIBIT
#9 TEW
12-14-98

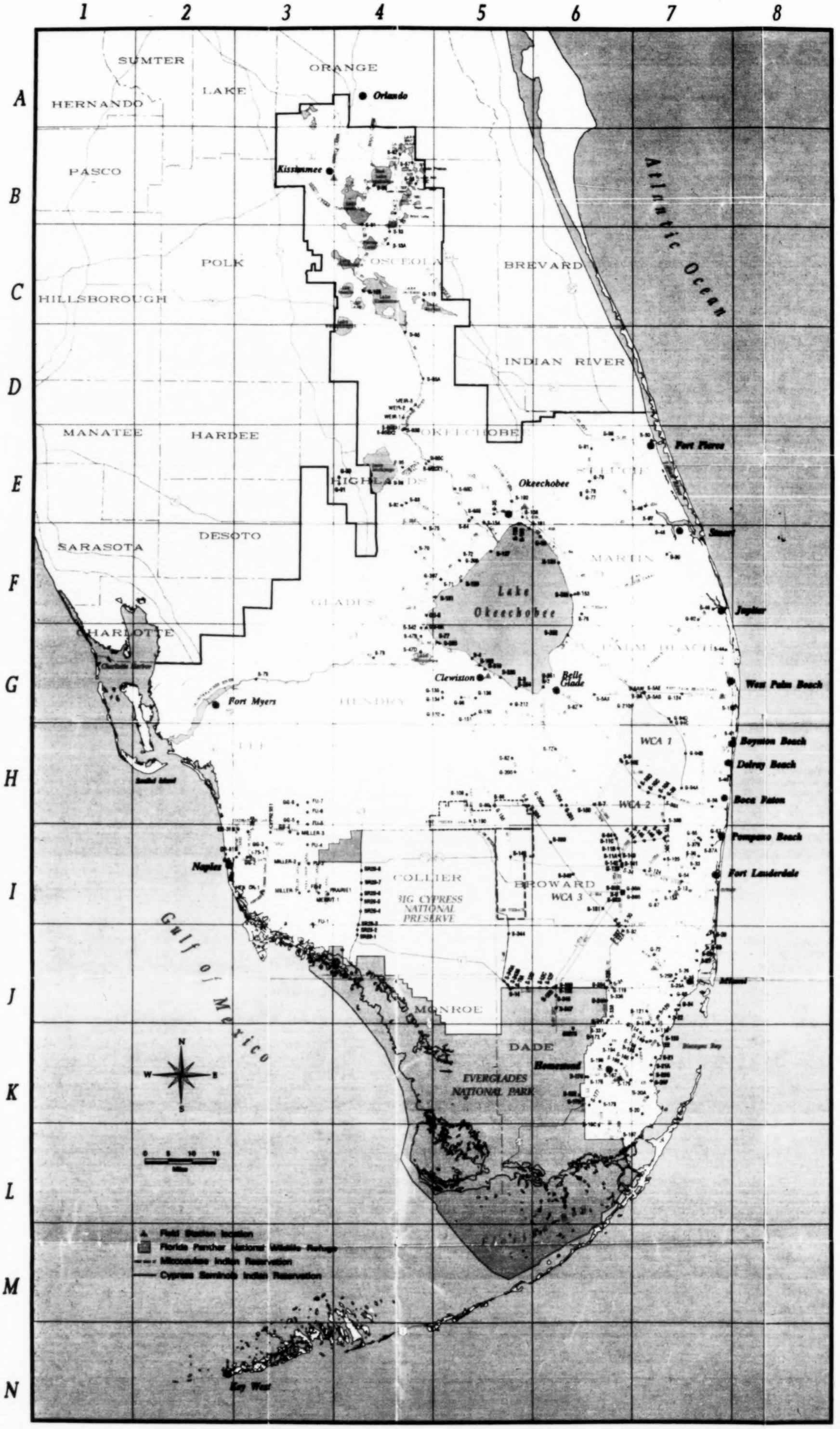
EXHIBIT NO. 9
U.S. District Court, So. Dist. of FL
No. 02-626
So. FL Water Mgt. v. Miccosukee Tribe




Boynton Beach
Delray Beach
Boca Raton
Pompano Beach
Fort Lauderdale
Miami
Atlantic Ocean
WCA 1
WCA 2
WCA 3
Homestead
EVERGLADES NATIONAL PARK
L-28 INTERCEPT
L-28 TERRACE
L-67A
L-67C
L-67 EXT
L-67 EXT
L-67 EXT

STRUCTURE LOCATIONS

CR-31N	I 3	S-166	K 6
CR-31S	I 3	S-167	K 6
CU-5	F 4	S-169	G 5
CU-5A	G 4	S-173	K 6
CYPRESS1	J 3	S-174	K 6
FU-1	I 3	S-175	K 6
FU-2	I 3	S-176	K 6
FU-3	I 3	S-177	K 6
FU-4	I 3	S-178	K 6
FU-5	H 3	S-179	K 6
FU-6	H 3	S-18C	L 6
FU-7	H 3	S-190	H 5
G-34	J 7	S-191	F 5
G-35	E 5	S-192	E 5
G-36	F 6	S-193	E 5
G-54	J 7	S-194	K 6
G-56	H 7	S-195	K 7
G-57	I 7	S-196	K 6
G-58	J 7	S-197	L 6
G-64	I 6	S-2	G 6
G-65	I 7	S-20	K 7
G-72	J 7	S-20A	K 7
G-77	E 6	S-20F	K 7
G-78	E 6	S-20G	K 7
G-79	E 6	S-21	K 7
G-81	E 6	S-21A	K 7
G-85	E 4	S-22	J 7
G-86N	I 6	S-235	G 5
G-86S	I 6	S-236	G 5
G-87	I 7	S-24	J 6
G-88	H 5	S-24A	J 6
G-89	H 5	S-25	J 7
G-90	E 4	S-25A	J 7
G-91	E 4	S-25B	J 7
G-92	F 7	S-26	J 7
G-93	J 7	S-27	J 7
G-94A	H 7	S-28	J 7
G-94B	H 7	S-29	J 7
G-94C	G 7	S-3	G 5
G-94D	G 7	S-30	I 6
G-95	G 5	S-308	F 6
G-103	C 4	S-31	I 6
G-106	E 5	S-310	G 5
G-108	H 5	S-32	J 6
G-113	C 4	S-32A	J 6
G-114	K 7	S-33	I 7
G-119	J 6	S-331	K 6
G-123	J 6	S-332	K 6
G-124	G 7	S-333	J 6
G-134	G 5	S-334	J 6
G-135	G 5	S-335	J 6
G-136	G 5	S-336	J 6
G-150	G 5	S-337	J 6
G-151	G 5	S-338	J 6
G-152	G 5	S-339	I 6
G-155	H 5	S-34	I 6
G-200	H 5	S-340	I 6
G-201	H 6	S-342	G 4
G-204	H 6	S-343A	J 5
G-205	H 6	S-343B	J 5
G-206	H 6	S-344	J 5
G-207	F 5	S-346	J 6
G-208	F 5	S-347	J 6
G-210	G 7	S-351	G 6
G-211	J 6	S-352	G 6
G-212	G 5	S-354	G 5
G-3273	K 6	S-36	I 7
GG-1	I 3	S-37A	I 7
GG-2	I 3	S-37B	I 7
GG-3	I 3	S-38	I 7
GG-4	I 3	S-38A	I 7
GG-5	H 3	S-38B	H 7
GG-6	H 3	S-38C	I 7
HEN CR-1	I 3	S-39	H 7
I-75-1	I 3	S-39A	H 7
I-75-3	I 3	S-4	G 5
MERRIT-1	I 3	S-40	H 7
MILLER-1	I 3	S-41	H 8
MILLER-2	I 3	S-44	G 7
MILLER-3	I 3	S-46	F 7
PRAIRIE1	J 3	S-47B	G 4
SR29-1	J 4	S-47D	G 4
SR29-2	J 4	S-48	E 7
SR29-3	I 4	S-49	E 7
SR29-4	I 4	S-50	E 7
SR29-5	I 4	S-57	B 4
SR29-6	I 4	S-58	B 4
SR29-7	I 4	S-59	B 4
SR29-8	I 4	S-5A	G 7
S-10A	H 7	S-5AE	G 7
S-10C	H 7	S-5AS	G 7
S-10D	H 7	S-5AW	G 7
S-10E	H 6	S-5AX	G 6
S-118	K 7	S-6	H 6
S-119	K 7	S-6Z	G 6
S-11A	I 6	S-60	B 4
S-11B	I 6	S-61	B 4
S-11C	I 6	S-62	B 4
S-120	J 7	S-63	C 4
S-121	J 7	S-63A	C 4
S-122	K 7	S-65	D 4
S-123	K 7	S-65A	D 4
S-124	I 7	S-65B	E 4
S-125	I 7	S-65BX1	E 4
S-127	F 5	S-65BX2	E 4
S-129	F 5	S-65C	E 4
S-12A	I 5	S-65CX1	E 4
S-12B	J 5	S-65D	E 5
S-12C	I 6	S-65E	E 5
S-12D	I 6	S-68	E 4
S-12E	I 6	S-7	H 6
S-12F	I 6	S-7Z	H 6
S-13	I 7	S-70	F 4
S-131	F 5	S-71	F 5
S-133	E 5	S-72	F 5
S-135	F 6	S-75	F 4
S-13A	I 7	S-76	F 6
S-14	I 5	S-77	G 5
S-140	I 5	S-78	G 4
S-141	I 6	S-79	G 3
S-142	I 6	S-8	H 5
S-143	I 6	S-8Z	H 5
S-144	I 7	S-80	F 7
S-145	I 7	S-82	E 4
S-146	I 7	S-83	E 4
S-148	K 7	S-84	E 5
S-149	K 7	S-9	I 6
S-150	H 6	S-97	E 7
S-151	I 6	S-99	E 6
S-153	F 6	WEIR-1	D 4
S-154	E 5	WEIR-2	D 4
S-155	G 8	WEIR-3	D 4
S-165	K 7		



CANAL/LEVEE LOCATIONS

AIRPORT ROAD CANAL	I	3
BOGGY CREEK	B	4
C-1	K	7
C-10	I	7
C-100	I	7
C-100A	I	7
C-100B	I	7
C-100C	I	7
C-102	K	7
C-102N	K	7
C-103	K	7
C-103N	K	6
C-103S	K	6
C-109	L	7
C-11	I	7
C-110	L	6
C-111	K	6
C-111	L	6
C-111E	K	6
C-113	K	7
C-12	I	7
C-13	I	7
C-14	I	7
C-15	H	7
C-16	H	7
C-17	G	7
C-18	G	7
C-19	G	7
C-1N	K	7
C-1W	I	7
C-2	I	7
C-23	E	7
C-23A	E	7
C-24	E	6
C-25	E	6
C-25 EXT	D	6
C-29A	B	4
C-29B	B	4
C-3	I	7
C-30	B	4
C-304	B	4
C-31	B	4
C-32B	B	4
C-32C	B	4
C-32D	B	4
C-32F	B	4
C-32G	B	4
C-33	C	4
C-34	C	4
C-35	C	4
C-36	C	4
C-37	C	4
C-38	D	4
C-39A	E	4
C-4	I	7
C-40	F	5
C-41	F	4
C-41A	E	4
C-42	I	4
C-43	G	4
C-44	F	4
C-51	G	6
C-59	F	6
C-6	J	7
C-7	I	7
C-8	I	7
C-9	I	7
C-9 EXT	I	7
CALOOSAHATCHEE RIVER	G	2
COCOHATCHEE CANAL	H	3
CYPRESS CANAL	I	3
DANIA CUTOFF	I	7
FAKA UNION CANAL	I	3
GOLDEN GATE MAIN	I	3
HENDERSON CREEK	I	3
HILLSBORO CANAL	I	3
I-75 CANAL	I	3
ISTOKPOGA CANAL	E	4
KISSIMMEE RIVER	D	4
L-1	G	5
L-10	G	6
L-12	G	6
L-13	G	6
L-14	G	6
L-15	H	6
L-16	H	6
L-18	H	6
L-19	H	6
L-2	H	5
L-20	G	6
L-21	G	5
L-24	G	5
L-25	G	5
L-28	G	5
L-28 INTERCEPTOR	I	5
L-29	I	5
L-3	H	5
L-30	K	6
L-31E	K	6
L-31N	K	6
L-31W	K	6
L-33	I	6
L-35A	I	6
L-35B	I	6
L-36	I	6
L-37	I	6
L-38E	H	6
L-38W	H	6
L-39	H	7
L-4	H	5
L-40	H	7
L-41	G	4
L-42	G	4
L-47	F	6
L-49	F	5
L-5	H	6
L-50	F	4
L-59	F	5
L-6	H	6
L-60	F	5
L-61	F	4
L-62	E	5
L-63N	E	5
L-63S	F	6
L-64	F	6
L-65	F	6
L-67 EXT	I	6
L-67A	I	6
L-67C	I	6
L-68A	I	6
L-7	H	6
L-8	G	6
L-8 TIEBACK	G	7
L28 TIEBACK	G	5
LD-1	G	5
LD-3	F	4
LD-4	F	5
LD-9	G	6
MIAMI CANAL	I	7
MERRITT CANAL	I	3
MILLER CANAL	I	3
NO. TIEBACK	F	6
NORTH FEEDER CANAL	H	5
NORTH NEW RIVER	I	7
PRAIRIE CANAL	I	3
REEDY CREEK	B	3
SHINGLE CREEK	B	4
ST.LUCIE CANAL	F	6
TAYLOR CREEK	E	5
WEST FEEDER CANAL	H	5
WEST PALM BEACH CANAL	G	7

SFWMD STRUCTURE AND CANAL LOCATIONS

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